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## New York Honey Goes To Market

### PART II—CLOVER

Some Facts About That Part of the Crop Which Is Not Marketed Locally By the Producers

By R. B. Willson.

THERE is one outstanding fact about the marketing of New York clover honey in the large eastern markets to which our producers give little heed. It is this: that upon the size of the crop in southern California depends to a great extent the demand for the Empire State product. When the California beekeepers have a large crop, car lot business with eastern buyers becomes brisk. The reason for this is three-fold. First, sage and orange honey are always in good demand when not too scarce to be costly, because of their excellent flavor. Secondly, sage honey is held in high esteem by bottlers because it does not granulate. Thirdly, a large amount of car-load business is offered to the trade, and in this they rejoice, for profits are proportionately large and the dealing is clean-cut and not nearly so bothersome, so they say, as that entailed by the picking up of ton lots here and there of eastern clover. In this regard, a large packer of honey in Brooklyn frankly told me, when during the Christmas holiday season last year I was attempting to find out what became of our honey that left upstate for the big city markets, that he did not know who bought New York State clover honey when California had a big crop. "When they do," said he, "we don't buy a pound of your honey." Nor do many other packers.

Thus for three seasons now, New York has enjoyed a freedom from California competition. But the competition will return and then instead of an easy flow of honey to our markets there will be a backing up of it. Beekeepers will hustle to sell more to consumers in their own producing areas and trade will be sought in remote places that are not solicited

during such years as the past three.

Our unique co-operative selling plan in New York will prove its great worth the first year California comes back. Our sales agent, the Hershel Jones Marketing Service, Inc., has made contact throughout the east solely for our New York honey. Thus, come what may, the machinery for wide distribution of the product of the members of the Empire State Honey Marketing Co-operative Association, Inc., is in operation. In the opinion of the writer the matter of keeping in touch with hundreds of potential buyers of honey is the most important factor in our marketing association's present success. This is wholly a matter of distribution, the lack of which appears to be hindering progress in honey marketing more than any other factor, else why should a large Pittsburgh bakers' supply firm be found to be buying Porto Rican honey at the same price they could buy top grade clover, or why should Mr. E. R. Root find an audience of 1,500 people in the Allegheny Mountains not one of whom ate honey?

There were some complaints from the honey buyers about the producers. No one disputed the quality of our honey nor the integrity of New York beekeepers as a class, but that, generally speaking, honey is not packed with sufficient care to withstand the rough treatment it is apt to get en route to market, was a common charge. Only the heaviest kind of honey cans and the stoutest of wooden cases should be used for early shipments of extracted honey before granulation. As for comb honey, it would seem that there are not more than two or three producers in New York who can be relied upon to grade, pack and load properly a shipment of this delicate and

fragile commodity. The large buyers of comb honey in New York City have great respect for the Colorado Association under the management of Mr. Rauchfuss, because a car of comb honey bought from him will arrive in New York in perfect condition and according to grade, but a shipment from New York is not marketable until every section in every case has been inspected.

This is not the place for directions on how to grade and pack honey for shipment. Sound advice and specific information on how it should be done have frequently been published. Suffice it to say that here is another hindrance to progress in getting greater distribution for honey. The proposed Federal grades and standards may help, but in the meantime many firms of national scope have tried comb honey only to discontinue handling it because all profits have been lost through breakage. The honey buyer of the Austin-Nichols Company, a gigantic wholesale grocery firm, informed me that this past season was the last one for them in the comb honey business. An outlet for thousands of cases of New York clover comb honey is thereby shut off, and who is to blame? Another, thirty-five years a dealer in comb honey, states that this business has netted him a loss. Why? The answer again is breakage. The recent effort to rally beekeepers to the production of comb honey was largely misspent. When beekeepers learn to pack properly their comb honey for shipment, and grade it according to some standard rather than a vague something they think they know, the demand for comb honey will return and production will rise to meet that demand.

After that harsh criticism it is impossible to resist telling a tale on the

other fellows. All beekeepers who have ever read a bee journal or attended a beekeepers' meeting have smarted under the rebuke that, when it comes to marketing methods, we are bunglers and notorious price cutters. For all that has been said of them I don't believe they are the bunglers and price cutters that the honey dealers are. I have a large bottler's word for it that the honey packers are the most colossal fools in the world, because of their price cutting. Another assured me that the business methods of a competitor were ruinous to the trade and on visiting the competitor I heard the same thing said of the first critic. There was much of this. Apparently the honey buyers don't observe the so-called recognized channels of trade, the jobbers, wholesalers, retailers, etc., any more keenly than do the beekeepers. They try to sell honey at a profit and not infrequently sell it at no profit to move what they have on hand. Consequently my New York trip was a revelation to me. The next time I hear a speech arraigning the beekeeper for his woeful lack of business sense and in which he is urged to use methods employed in established business, I shall probably have to smile a little, knowing smile. But, please, don't anyone construe this as a defense of the wasteful practices of price cutting among beekeepers.

The uses of our clover honey are not many, at least not large quantities are used in varied fields. The bottlers, just at present, take most of it. In the Greater New York territory there are two large bottlers whose keen business ability has resulted in a tremendous outlet for New York honey, that is during the years of California's failures. It was one of these men who told me that he would quit using our product when California again had a normal crop.

Candymakers take more than I thought. The reason honey is used, however, is not for anything it adds to the taste of the candy, but because it lends a desired texture and adds to the keeping qualities. In this connection it was interesting to learn that two candy firms experimenting independently found basswood honey the only one to retain its distinctive flavor through the cooking processes, but because it could not be had in large quantities every year, clover honey was used instead.

Bakers, it was ascertained, have reacted favorably to educational talks given them by salesmen working to sell New York Association honey. When someone took the trouble to explain to them the dif-

ference between cheaper grades and the excellence of clover honey, they became interested and are making good customers. I was surprised, on the other hand, to learn from the largest maker of whole wheat bread in Brooklyn that the public preferred such bread baked with brown sugar rather than honey at the same price. This was after months of experimenting and letting them make their own choice. The honey loaf fell off in sales until it was no longer profitable to bake it.

The aggregate business of those engaged in selling at roadside markets about New York, or in supplying those markets, amounts to a great deal during the year. Unfortunately these people do not know much about honey, and apparently some of them think that such consumer trade as they get is to be exploited, for the honey sold, thus, is on the average abominable stuff that preju-

dices the public mind still more strongly against honey. Not all honey thus sold is inferior, however, for several of the largest roadside markets supply men buy honey in large quantities from our New York association.

The encouraging thing about the whole marketing situation in the large cities of the east is that honey is gaining in popularity annually. All of the gospel about the goodness of honey is having its effect. It is true that there are many competing foods and that to them many additions are being made every year, but honey is more than holding its own. Still, only a beginning has been made. Let's not let up on the roadside, in the press, in the schools, at fairs, in store windows and on the radio, until as in Switzerland, honey is a stable commodity on the market and a common food in the home.

New York.

## The Deep Frame Hive vs. the Food Chamber

By W. M. Egan

**V**AST improvements in beekeeping have been made since my first experience with bees fifty years ago. I am only ten years older than the American Bee Journal and was twenty-five before I commenced handling bees. In those days the Langstroth one-story hive was too big for our unimproved stock of bees, so we reduced it with division boards to economize honey and to make the bees more comfortable, the argument then being that the more space the bees had the more honey they would consume and the more danger of the bees dying with cold. Still it was often we would find them dead in the spring with plenty of honey in the hive.

Since then, queens have been bred up and improved until now a Langstroth hive is not big enough even without using a division board. Requeening in the fall with these prolific queens produces monster colonies and takes more honey to winter them than a one-story hive will hold. I can see by the arguments since I began to read the bee journals again that more room is necessary for our improved pets to be made comfortable and to provide space for honey enough so they will not starve to death.

Some claim that bees will not freeze to death if they have plenty of honey, no matter how big the hive or how ventilated. With this view, the remedy is the food chamber. A simple thing and easily applied. It is said that "On an average bees in one hive will have 20

to 30 pounds of honey in the hive in the fall." When such a colony dies of starvation there is at least 20 pounds of honey wasted. This at 15 cents a pound is worth \$3.00. Colonies that have 50 pounds of honey in the fall have \$7.50 worth of honey and should produce not less than 75 pounds of honey, a difference between a loss of \$3.00 and a gain of \$11.25." In the same article it says, "In the North, where the colonies are wintered outdoors and **thoroughly protected from the cold**, perhaps the most satisfactory way to provide the stores is to put the additional hive body on the hive in the fall."

This food chamber idea is the point I wish to discuss with my friends, the beekeepers. If bees did not die, freeze to death or suffer with the cold, and only needed plenty of honey, then this would be one way to get out of the difficulty. I don't say the best way, but if bees did not suffer with cold there would be no need of protection. All our old reasonings about division boards for reducing the hive space, chaff cushions, double-walled hives, and all other protective features, would be unnecessary.

My theory with bees is as with my own home. I want a door or window open to the outside fresh air like the bees' entrance. I do not want all the doors of the house open to cause drafts from the colder portions of it, and above all, I do not want my ceiling pulled off, even though the garret was filled with cold honey. If the bees are

given closed end frames and an oil-cloth cover they will seal every bedroom they have so tight that none of the warmth from their bodies can escape, except at the bottom of the combs, where the carbonic acid gas will fall of its own weight and escape.

Of course a sleeping porch is all right with us if we have plenty of bed clothes around us, but try it in the house with all the doors open and no ceiling and no bedclothes. It is the same with the bees. They need comfortable quarters. They have no bed clothes, only the outside of the cluster of bees, which must be brought under cover often or freeze to death, if the hive is cold enough. I believe, though, that bees will never freeze to death between two combs if the top and sides are sealed tight. If the whole hive is prepared that way it does not matter so much how large the hive, for each space will be a private bedroom that can be kept warm by the bees that are in each space. This is what I call an Automatic Flexible Hive and it may be big enough to accommodate the most prolific queen and the largest swarm we are able to produce with all the improved stock and best management we can have.

I intend to use a larger hive to accommodate them and frames  $11\frac{1}{4}$  inches deep, closed ends to the bottom. Ten frames I think will be about right for this locality and then my Langstroth equipment will just fit. I then will be able to test out my ideas of an Automatic Flexible Hive big enough for the biggest swarm I am likely to have for wintering.

Take notice that the bees will have a dead air space at the end of their frames clear down and clear across their hives; and each comb is a division board with as many dead air spaces as the bees fail to occupy each side of their cluster. Overhead all is warmly covered perfectly tight except the passage from comb to comb of about two bees' space made by two three-eighth inch strips placed over the frames, which will not drain their apartments of warmth. They can then readily take up as large or as small a space as they may wish and it is all equally protected automatically. Besides with the deep frames, there is ample room for their food right where they want it.

There will be no need to pull the ceiling off to put cold honey in the garret for the bees, as they already have it in a warm place just above their cluster and just as well protected as they are. In my judgment this is a far better provision for the comfort, protection and prevention

of starvation of the bees than any plan of food chamber that can be devised and just as easily provided. It is a big hive and automatically smaller or larger as the bees may require, without any tinkering for at least six months. You can give them all the outside protection you may desire.

It has been my observation ever since I have handled bees that they always put more or less honey immediately over their brood nest and that the cluster of bees in winter is about the shape of the brood nest in summer, varying according to the season. They expect their honey to remain where they put it, and it is better so if the hive is deep enough to contain sufficient stores, otherwise it is taken off, or the food chamber must be substituted.

It is easier and cheaper to provide the extra room for winter stores in the body of the hive than it is to provide a food chamber. Either one or the other must be provided during

the season. I figure from the price lists that the additional cost of a super is over \$1 more than the extra cost of the deeper frame hive. The work of attending to the deeper hive compared to the super is no greater and you have a different frame in each case. I don't see any advantage in the food chamber in this comparison.

The advantages are: a brood nest 40 per cent larger than the regular Langstroth, a compact winter nest all in one story, a large reserve of honey just where you want it, above the brood, your prolific queens are satisfied and there is less swarming. All old equipment can be used, hence no loss from that source. The bees can seal each space between combs so that their accumulated heat cannot escape and they can enlarge or contract the space they want to keep warm without any exposure from drafts throughout the hive, hence they are comfortable at all times. Utah.

## World's Championship In Honey Production

**M**R. R. A. MORGAN, of Vermilion, S. D., claims the world's championship in comb honey production. We give a cut representing him with two of the best cases, one with a wide glass, the other a standard shipping case. He writes:

"My experiment is as follows: About April 1, I selected one colony of Gray Caucasians for the test. They were in a standard 10-frame Langstroth hive with Hoffman frames, and combs built on Dadant's wired foundation. The sections were what are known as one pound sections, being  $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{8}$  inches, and filled with full sheets of extra thin foundation and wood separators. The honey was removed from the hive as soon as it was well sealed. September 15,

I closed the contest after having given them special attention for 168 days.

During this time they produced 22 cases of honey, containing 28 sections each, or 616 one-pound sections. There was enough marketable honey in this to fill 22 shipping cases holding 24 sections each, or 528 sections. This leaves 88 sections that were not fit for market, but good enough for home use, or for feeders. The most of the 22 cases are No. 1 fancy white."

We believe it will be difficult for anyone to beat this record. Dr. Miller's best colony, in 1913, gave 402 sections. His average per colony was 266.5 sections.



R. A. Morgan and some of the record honey.





Established by Samuel Wagner in 1861.

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### Granulation Of Honey

Most of our readers already know that, in most countries, honey is expected to granulate, while in this country everything possible is done to prevent its granulation, owing to a popular prejudice against granulated honey.

In the present number the reader will find an article by J. A. Munro, on the causes of granulation or crystallization. Among those causes, he places the action of air. This is undoubtedly one of the main causes of granulation and that is why honey which has been extracted from the combs granulates, while the same honey remains liquid, if left in the comb.

It is amusing to see that, while our writers exert themselves to give methods to prevent honey from granulating, the European writers give directions to cause honey to granulate. For instance, Hamet, the well-known champion of the straw skep, during the last half of the past century, gives in his book the following instructions upon "How to Make Honey Granulate":

"A few beekeepers whip their honey in order to bleach it; this operation does not change its color, but it causes it to harden under more favorable conditions. If, for instance, you have honey which does not granulate properly, which begins by having grains at the bottom of the vessel in which it has been placed, remaining liquid in the other parts, whip it with a wooden spatula, that is to say, break the grain already formed and bring air into it, the honey will shortly granulate properly, which it would not have done had it been left to itself."

In "L'Apiculteur," page 285 of June, 1866, it is recommended not to close the vessels in which honey is placed, until it is granulated.

On page 290 of July, 1862, of the same magazine, we find directions to refreshen old honey which has begun to liquify. Melt it at low temperature, skim it, cool it, then add to it a proportion of new honey beginning to granulate.

Through all those old magazines we find the praise of Narbonne honey, which is reported as very white honey, very thoroughly granulated, with a very fine grain.

Now for our own experience: We have regularly found honey to granulate very readily if it is poured out of the receptacles in which it was placed in bulk at the time of harvesting when drawing it into small vessels, such as ten-pound pails. I remember one lot especially that granulated almost immediately after being drawn and had the finest grain I ever saw.

From all sides we hear the statement that granulation of honey, although not the only sign of purity, is a very good indication that the honey is pure.

### Effect of Weather Upon the Honey Crop

We acknowledge receipt, from the Bureau of Entomology at Washington, of Bulletin No. 1339, treating of "The Effect of Weather Upon the Change in Weight of a Colony of Bees During the Honeyflow."

As one might expect a subject as interesting as this

is to beekeepers, is surrounded with so many factors, both in the temperature and in the condition of the colony, besides the different honey yielding conditions of the flowers, that positive statements cannot be made, even with all the data so far gathered by observers in many countries. Mr. James I. Hambleton, Apiculturist in charge, making the report, cannot do much more than quote the experiments already made, and only at the Bureau of Entomology, but all over the civilized world, and show the difficulties to be encountered and the infinitely varied conditions. He quotes 36 authorities, men who have investigated the same subject, in France, Great Britain, Germany, Russia, Canada, and even in as far off countries as Japan.

Perhaps the man most quoted by Hambleton is Bonnier, the French botanist who was also a leading beekeeper. By referring to Bonnier's works: "Cours Complet d'Apiculture" and "Les Nectaires," we can have a faint idea of the factors having influence upon the production of nectar in the flowers and upon the activity of the bees. Bonnier, in his "Cours" devotes 34 pages to "Nectar and Nectaries," a subject usually left out entirely by the writer on beekeeping. But Bonnier's mind was turned in the direction of flowers and their honey-yielding qualities. In most of his numerous books on botany, he marked with an asterisk each of the plants whose blossoms were visited by bees. His book "Les Nectaires," a work of 212 pages, with 130 engravings, was not published for profit, but, as we understand it, was printed only to the number of a few hundred copies, mostly given away to scientists.

If we mention Bonnier to such length, it is only to show the difficulties and intricacies of the subject under taken by Hambleton. He must study not only the weather conditions, the temperature, the electrical influences, the elevation of the locality, the greater or less tendency of the blossoms or of their nectaries to produce nectar, but also the colony conditions, the activity of the bees, their greater or less prolificness, and dozens of other points that we cannot even think of. These difficulties explain why, with so many writers on bees during centuries, it has been so far impossible to give any positive assurances concerning the factors of nectar secretion and hive gains. But every day we learn something additional and we must encourage our devoted workers so that they may help solve the problems.

The Bulletin contains 52 pages and may be obtained, as long as it lasts, from the "Office of Publications of the Department of Agriculture," as No. 1339.

### Overcoming Foulbrood

In the present number, Mr. Cale has an article bearing on the resistance of bees to foulbrood. There is so little that we know, and so much that we don't know, that we may compare ourselves to a man groping in the dark for that which he seeks.

Were there not diseases in the old days, plagues which decimated the population of the world and disappeared as quickly as they had come? The plague of Florence, so strikingly described by Boccaccio in the Decameron; the plague of London, of 1665, related by the naive Samuel Pepys, and many other plagues through the Middle Ages; those diseases, epidemics, wore themselves out without destroying the entire population. Did the people become immune to them, or did the disease disappear by self-extinction?

Perhaps it was a little of both. Many of my older readers will remember when the Colorado potato bug became so plentiful that many people predicted that



potatoes would disappear. But the Colorado potato bug has taken a very modest place in the list of unwelcome visitors. What happened to it? The entomologists tell us that its enemies began to thrive, as soon as it became a pest, and regulated its spread within reasonable limits.

Is it not likely that, at some time or other, the enemies of the *Bacillus* larvæ, as infinitely small as the *Bacillus* itself, or perhaps even smaller, may become developed so as to reduce its spread? That is evidently what happens when a being becomes immune to a disease. It harbors, within its own body, the enemies that counter-balance the disease.

Were it not for such agents, there is no reason why the Plague of London, or of Florence, or of Marseilles, or the Black Plague, the Bubonic Plague, could not have destroyed the entire human race.

We must certainly not allow ourselves to go to sleep, waiting for natural agents to do the work of overcoming the foulbrood; it is better to do as our scientists did when they discovered that Yellow Fever was caused by the mosquito *Stegomyia*: take steps to prevent its production. Yellow Fever is a thing of the past, and sooner or later the foulbrood of our bees will also be a thing of the past. But let us do our best to help bring about the natural conditions that will destroy it or reduce it to harmlessness.

## Progress?

P. H. J. Baldensperger, in an article written for the "France Apicole," on the advantage of movable-frame hives over the old gum, box hive or skep, makes the remark that the box-hive beekeeper is very much opposed to arguments upon the question, and compares him to an Arab to whom he offered a smoked glass to look at an eclipse in a street in Beyrouth: "Not on your life, will I look into your smoked glass; I might be convinced that you are right." There are many people who are afraid that they might be convinced, and for that reason will not listen to common sense. But we must at least give credit to the American beekeepers that they are willing to listen to the arguments on movable-frame hives. It takes old country bee owners to refuse to be convinced, for fear they might have to spend a little money on better hives.

## Loss In Feeding

In "Gleanings" for November, J. E. Crane comments upon the statement of Geo. S. Demuth that it is necessary to feed as many pounds of dry sugar as we wish to supply in liquid food to the colony we feed. He explains that although water in about half the weight of the sugar is used to dilute it, yet the colony does not gain in weight more than the weight of the sugar.

The explanation is in the fact that, when bees are fed, a certain portion of the food goes into brood and another portion is changed into comb. Whenever bees get a supply of food and keep their stomachs full for several days together, there is always a production of wax. We can see this by what we call the "whitening of the combs." Although the quantity of beeswax thus produced is inconsiderable, wax produced in cool weather is always even more expensive to produce than in warm weather. That is why those who have tried to feed bees sugar syrup, for profit, have always found the results disappointing.

## Appreciation

Bee World, September, 1925:

"Your paper still continues to flourish in spite of all opposition, and I sincerely hope it will, so that in time it will equal the American Bee Journal. Col. C. Samman, Essex, England."

We have often said that it is not proper to insert in our columns praise of the American Bee Journal, received from any of our readers. But this is from a similar publication, and a publication that we have often mentioned as the best.

Reader, will you excuse us for a little pride? This is really very pleasant.

## Color Grading of Honey

This is Department of Agriculture Circular No. 364. Its author, E. L. Sechrist, one of the investigators at the Bureau of Bee Culture, is very well known to our readers. He is a man of great experience who has kept bees in different countries.

The circular or bulletin is intended to explain the need and the use of the color grader for honey, devised and put into practice by Messrs. Phillips and Hambleton. It is a very good instrument, the only objection to it from beekeepers being its cost. But when we consider the fact that honey may be judged only according to its greater or less clearness, we realize that a great deal of care is needed. Honey which is granulating, and is therefore turbid, is lighter in color than when liquid.

The seven shades suggested by Mr. Rauchfuss, at the Congress where the matter was discussed (I believe it was St. Louis), are the following: Extra-white, water white, white, extra-light amber, light amber, amber and dark; the two "extra" being thought unnecessary by many beekeepers.

I do not think there is any need of additional standards, although we may say that there are hundreds of shades, between the lightest and the darkest.

In France, the Ruchers D'Ornay manager has devised what he calls a "melloscope," of very low price; but it is just a set of glass plates numbered, so that each color bears a number corresponding to the shade. Nothing is done towards the consideration of greater or less density or turbidity. Yet such a method of measuring may suit a great number better than the very elaborate and positive method of the office of bee culture.

## A New Honey Bee

No, there is nothing new under the sun, and this "new honeybee" is evidently only a newly discovered bee.

It is described by Tarlton Rayment, a contributor of the American Bee Journal, in "The Australasian Beekeeper" and is a native of Australia. Its cells are nine to the inch, so they are much smaller than the different breeds of *Apis mellifica*.

We have just received an article from Mr. Rayment describing this bee. We will also give cuts, and this will appear soon, in our columns.

## Addled Brood

This is another trouble, mentioned already in the Scottish Beekeeper. In the October number there is an article on the subject, by John Anderson, M. A., B. Sc., describing it. It is hardly worth while to say much about it, until more is found out; already they say that it "is due to the queen, and follows the queen when she is transferred." The brood dies when sealed or about to be sealed, and the bees remove it.

## Italian Beekeepers' Congress

The Eighth Congress of the Italian Beekeepers was held September 14 and 15 in Bologna, in the Palace of Count Rossi. Over 200 beekeepers were present and they had numerous exhibits.

The magazine "L'Apicoltura Italiana" devotes 20 pages to an account of this congress, with numerous photos. The congress was followed with excursions to the apiaries of a number of beekeepers of the vicinity.

## An Ecuador Book on Bees

Here comes a 32-page Ecuador bulletin on beekeeping, Guia Practico De Apicultura, by Hugo Munzer, sent to us by Senor S. Gomez R., of Loja. The modern methods are slowly finding their way to the ends of the world. The pamphlet is quite thorough, even if short.



Home apiary of D. C. Gilham, run for comb honey. Work shop at right. One story colonies are nuclei.

## Hon-E-Nut Chocolates and Their History

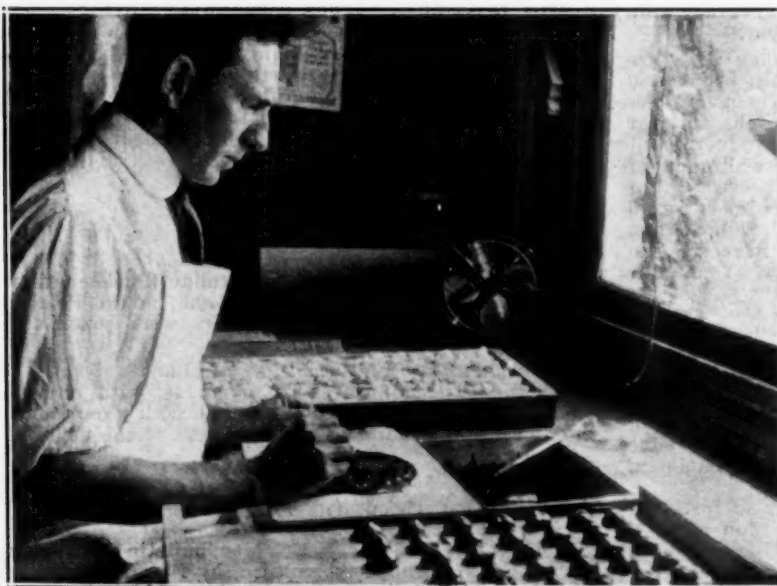
By D. C. Gilham.

**B**ACK in the years 1915-16 I began eating a combination of honey and peanut butter as a spread on my bread. I liked it so well that I decided to try and place it on the market. After talking over the matter in question with some of my friends I hit upon the trade-mark of "HON-E-NUT BUTTER," and after due time succeeded in having it registered at Washington, D. C., Jan. 22, 1917. Then my troubles began. The product, after being bottled, soon became too hard to spread on crackers or sandwiches for which it was intended and I was compelled to remove same from the stores in which it had been placed for sale.

After some experiments I found that by adding peanut oil the product would remain soft for spreading. The returned goods were so hard that it could be cut out of the jars and eaten like a piece of candy. Then I had another idea.

I mixed my granulated honey and peanut butter, 50-50, and spread it out in trays on wax paper, let it stand for two or three days until the granulated honey had again stiffened in the product and then cut same in squares. To one lot I added melted chocolate when mixing it. I packed same in boxes in checkerboard style. They looked good and tasted good, but it didn't take long until the pea-

nut oil played a sad part with the outside looks of the candy box. Then I tried pressing the greater part of the oil out of the peanut butter. It didn't do much good and the candy,



Chocolate coating honey candies; honey centers to the left, finished goods to the right; melted chocolate in the pan with marble slab to work chocolates.



Hon-E-Nut straws, peanut butter center; label gold letters on dark background.

when it came to eating it, was not as moist. I had some friends at this time who were interested in running a fair for some local benefit and I induced them to try running some of my candies at their wheels. You can imagine my disappointment at seeing my candy ignored, or on several occasions thrown away for the sake of some cheap chocolate-coated candy made from glucose. I knew my candies cost more and were more healthful than the others.





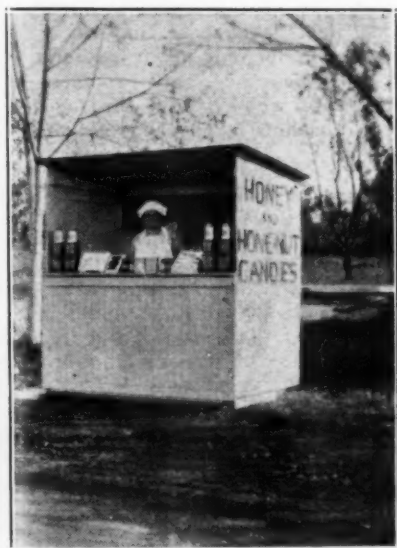
Hon-E-Nut candies in de luxe half-pound and pound lithographed tins.

These conditions, although discouraging, set me to thinking on chocolate-coated goods. I figured that the coating might help to retain the oil in the candies and help to keep the box looking better. The coating, together with the wax bonbons cup into which this piece of candy is dropped as it is coated, has

of these goods started moving slowly and about this time our state started holding its agricultural shows, with exhibits for honey and honey products. I could not attend the first show but shipped a lot of my honey and some candies and cleaned up nearly everything on first premium. This made me feel good, and especially on the candy end, so I felt I must try and put out a larger assortment. I tried coating granulated honey. It was some job. I tried running it out into trays lined with wax paper and leaving it stand for several weeks to harden so I could coat it with chocolate. The results were not so bad but a friend told me that if the business should pick up and I was compelled to have goods standing around for that length of time before being able to use it, it

wouldn't pay. Find a way to use it within 24 or 36 hours. Another problem to solve.

Some years ago we had a candy factory in our town but for some reason or other it failed and closed up its doors. Just about this time a man wanting more room for his underwear factory bought the candy factory building and sold out the candy machinery. I went to the factory and looked over some of the equipment, bought starch trays, metal trays, a roller knife, a coating table with copper melting pans for the chocolate and marble slabs to work the chocolate on, at prices anywhere from 25 to 40 per cent of their original value. I felt I was striking a real bargain. With this equipment I started coating candy with a zeal, but it was not all plain



Road stand for honey and Hon-e-nut candies.

done wonders in keeping the package free from oil and in good shape.

At first I continued to make my dark and light centers and coated the dark center with milk chocolate and the light center with dark chocolate, so I could still pack goods with the checkerboard effect. These goods still held the combination of honey and nuts for which my trademark was intended. Then came the idea of chocolate-coated comb honey, with the addition of a nut on top to still hold the combination. The sale



Making honey marshmallow in a machine. Note electric heater under bowl. It is needed at times.

sailing. At times my chocolate would streak badly; it tasted just as good, but "Oh, the looks." The temperature of the room was all right (around 68 degrees is best), but still results were not what they should be. After coating many pounds of candy, the trick came to me one Saturday night about 10 o'clock, and I went to bed happy. Other Candy men have told me that the actual success of coating and turning out a product with a good gloss must be learned and come through practice and patience.

I experimented at different times for over a year before I found a process by which I could use my granulated honey within 24 or 36 hours after it had been cast in the starch forms. Much time and honey were lost until I got what I wanted. This gave me a new field for many varieties of honey candies. Now I thought of trying out a 5 or 10-cent piece for the market. Honey is heavy, it costs more than sugar and especially glucose, from which many of the cheap candies are made, and I could not turn out a big piece in look for the money. The weight was there and the quality, but not the size to take the eye. Although I have sold hundreds of dozens of 5 and 10-cent goods, still they move slowly except among folks who like honey, know its food value and realize the quality of the goods. The 5-cent piece has a queen bee cast on the top of it while the 10-cent piece is in the form of an old straw skep, a beehive full of honey and nuts.

Although we have an assortment of a dozen different kinds of HON-E NUT CHOCOLATES, there are a few who like the original piece of honey and peanut butter the best. In giving out a sample of the chocolate coated comb honey one time, the lady receiving it remarked that I had too much paraffin in my chocolate; she didn't realize it was the beeswax she was chewing. The pure food law prohibits the use of paraffin in chocolate coatings as it is not a food. At one time it was used extensively in coatings for Easter Eggs to help bring out a gloss.

My latest achievement in the line of honey candies is that of a Pure Honey Marshmallow. I had the formula in mind for some time and after the holiday business was over I took my honey to a friend of mine who had a power mixing machine for marshmallow, etc. I got my honey ready, placed it in the machine and turned on the motor. In less than five minutes we had the finest marshmallow you ever wanted to see. This was a small batch, just an experiment, but we got the results we were looking for. I have a machine or-

dered for myself. I endeavored to whip up by hand some marshmallow at home. I succeeded, but the result was not as fine a product as the machine will turn out. Your arm won't stand the job and the batch must be small. I had several pieces with me at our State Agricultural Show last month and several bee men you would know if I were to mention their names, told me that was the finest marshmallow they ever ate.

The better grades of marshmallow that you can buy today are made with sugar, the cheaper goods are made with glucose; that is why they dry up and get so dry and tough. Honey keeps cakes moist and I believe pure honey marshmallow will keep soft and not dry up. Time will answer that question for me. I believe that honey marshmallow will solve the problem of the larger 5 and 10-cent pieces of confection when it comes to the size. So many look at the size of a thing for the price and forget about the quality and the food value and the healthfulness of the food they eat.

My home and work shop are right in Schuylkill Haven, Pa., and about half a mile from our state highway. I felt that there was much lost trade running by me just a half mile away. Another friend lived along the highway. I built a portable booth at home 3½x6 ft. After it was all painted and lettered, it was only a matter of half an hour to load it in my truck, take it out to the highway

and place it to the right of his home. We were ready for business. A boy of 13 takes care of the booth during the summer months, and when it is not opened on account of the school term, the customers just stop at the house and the mother in the home looks after the business. I built the booth, I place the honey and honey candies there for sale, the folks in the home look after the sale of these goods and I give them 20 per cent of the sales for their work. To wholesale honey or candies the percentage is from 25 to 30 per cent off the retail price. This extra 5 to 10 cents that I am getting is paying for the booth. Here is a method that other beekeepers can follow out who do not live right along a good highway. Over half my receipts at the booth are from my honey candies. After placing two signs up about 200 yards on each side of the booth, "Honey and Hon-e-nut Chocolates 200 yards ahead," we found the sales almost double. The signs slow up the autoist before he drives by and does not care to back up.

I believe that the making and sale of honey candies by different persons in different parts of our country will help each other's sales and not be a hindrance. The one thing that should be kept in mind is having a nice, neat package so that when the customer opens it up it presents a good appearance, not a mess of stickiness, which I have seen on several occasions in packages not of my own.

Pennsylvania.

## Compliments of the Season

### Fancy Honey

C. B. HAMILTON'S APIARIES

FENTON, MICH.

## Greetings To Your Customers

Here is a reproduction, as near as it can be made, of a seasonal greeting card sent to us by B. F. Kindig, on which he comments as follows: "I take it from the general nature of the card, that it is being sent out to Mr. Hamilton's

customers. Beekeepers who retail honey do well to remember their patrons in this way."

The custom of seasonal greeting is now widely adopted. It is pleasant too, even though it has a business aspect.



# Bees Show Resistance to American Foulbrood

By G. H. Cale.

AT one of our large middle western meetings of beekeepers an astute gentleman asked a most intelligent question. Said he, "Will you tell me which came first, American foulbrood or *Bacillus larvæ*?" The reply was, "I will if you will tell me which came first, the hen or the egg?"

Foolish as this is, there is a tinge of reason in it. Unless you are a fundamentalist, as our above friend probably was, you must concede a share of evolution to our minute enemy, the *Bacillus larvæ*, and there is no accounting for the tiny path it may have traveled to its present favorite home in the intestinal tract of the honeybee larva. Who can say what previous hosts its ancestral millions may have gradually deserted in favor of the bee? Who can say from what dim corner in the world of bacteria it may have emerged from some common parent that had never placed the bee on its list of dainties?

Because this past is beyond our reckoning, however, does not put the germ of foulbrood beyond the control of the same laws that govern other forms of bacterial life. We are told by those who make a study of these things that bacteria are subject to rather quick adaptations, that they may change their feeding habits from one form of living thing to another, under the pressure of necessity, much more readily than the more highly developed organisms can do. Thus, although American foulbrood is almost as old as the literature on bees, there may have been changes in the nature of the disease of which we know very little from what we can see with the unaided eye.

We are certainly grateful to the scientists—Cheshire, Howard, White, Sturtevant and Phillips—who have found out so much for us of the nature of the disease. It brings it more into the light. The long-standing practical treatment for it, however, is quite old, having been first recommended by Schirach, in 1771, in his "*Histoire Naturelle de la Reine Abeille*," where he recommends the removal of all the combs, starving the bees for two days, then giving them fresh combs "with a remedy composed of diluted honey with nutmeg and saffron."

Little use for the nutmeg and saffron, but the rest of the plan was successful and was later worked out by D. A. Jones, of Canada, and still later Wm. McEvoy, then Inspector

of Apiaries for the Province of Ontario, succeeded fully in the method. His treatment has since been recommended by all authorities with slight variations.

Of the men who studied the disease intimately, Dr. White has made the most practical recommendations for its treatment. It was he who suggested the probable efficiency of formalin, but it remained for Dr. Hutzelman to first make up a solution which could be used with safety in comb sterilization. It is the only addition to treatment which has been made since Schirach's first suggestion.

It is not conceivable, however, with so many minds busy in the consideration of foulbrood, both among practical beekeepers and scientific students, that there are no further developments in the background which have not yet reached a stage where they can safely come to light in print. We get letters at rather frequent intervals from men who are trying to see the facts about foulbrood a little more clearly. It is very evident, oftentimes, that lack of training or insufficient and careless observation leads some of them into grave error or misleading by-paths, yet, here and there is one who is seeing something ahead with sufficient clarity to demand attention.

That the scientific men are also actively studying the problem is shown by the article on immunity appearing in the November number of "Gleanings" where Dr. Bruce Lineburg gives the results of his first efforts to find out whether apparent resistance to disease is inheritable. In the October issue of "Gleanings," page 669, Lineburg says:

"During the last summer I have been working with several colonies which are apparently immune to American foulbrood. The conditions under which this was discovered and also subsequent experiments lead me to believe that this immunity is inheritable. I am now carrying on further experiments to ascertain whether this is so and whether breeding from these resistant colonies may not result in producing a strain of bees which are immune to the ravages of American foulbrood."

"Gleanings" calls this a startling statement. It is startling and it is very possible that Doctor Lineburg is premature in announcing his work.

Immunity today is a much disputed subject, and a favorite one. So far, the best of our investigators seem to be only on the fringe of knowledge

about it. Whether or not a given disease can be thrown off, or resisted, or overcome, is bound up in so many newly developing facts that it is not safe to expect any factor associated with it to be inheritable. Immunity is a broad word and includes more than we have yet been able to find out. Nevertheless, there is the possibility of inheritance and it would be, indeed, a splendid development if persistent resistance toward foulbrood could be established with the hive bee.

We have always felt, however, that speculative publicity along this line is not desirable. Our present methods of handling disease are well known, but there are those of us who will catch at straws and who might welcome the chance to let disease run rampant, just because someone tells of an experiment which offers possibilities of getting away from the work of treatment. We do not want anything to undermine our present successfully established methods nor the system of inspecting which has cost so much to build up. It is dangerous to experiment unless one is in a position to lose nothing and to do really exhaustive and worth while work, and it is probably best to say little until results are positive.

Following this opinion, we have always refrained from publishing a thing in the nature of a foulbrood experiment, but since the subject has been brought up we feel that some credit should be given to at least one man who has worked along in silence for years in an honest effort to get more light on the nature of the disease and of its possible control within the hive.

At Corning, Iowa, John M. Bixler has been experimenting with his bees to find out what they will do when American foulbrood is allowed to remain constantly present in the apiary. His yard is located at considerable distance from other bees and his entire work has been a sacrifice to the quest for information. No one meeting John Bixler can doubt his sincerity or his patience or fail to see the splendid breadth of his mind. We have known of his work for a long time, but had agreed between us that little should be said of it and it is now reported only to give him due credit for the pioneer work that he has been doing and for the stimulation that it will give to others who may be in a position to go still further into the investigation.

Bixler's first experience with

American foulbrood was several years ago. He did not know of the presence of disease until he found bees robbing out dead colonies. To his surprise, he found three colonies which did not afterwards show disease although they had robbed freely from the diseased ones.

Then he began to question and to look around. This is the true spirit of the investigator. In another neighborhood he found three colonies left out of about 100 colonies, which were also free from disease, although they had robbed out dead foulbrood colonies. These colonies, on further questioning, proved to be related.

In another neighborhood it was claimed that only one colony survived out of about 300. This colony lived on and multiplied for years after. This gave Bixler the idea that some bees must have a sort of immunity. To go the limit with his idea on the first trial, he put a comb of diseased brood into one of his three colonies and the disease gradually disappeared and the colony was clean for years after.

Since then he has been constantly trying the thing over and over again. He has found that queens from the stock that do not readily contract the disease, when introduced to diseased colonies, soon produce bees that clean out the disease or are not susceptible to it; just what, he does not know. He has also found that queens raised from the stock of diseased colonies do not check the disease, even when the conditions are same as for the others.

Also important is the fact that some colonies show more resistance to the disease than others. Some will show but few diseased cells and will gather heavy yields of honey, while others, under the same conditions, will become badly diseased.

This is about the gist of his work so far. At one time he was ready to say surely that he was working with a definite and inheritable factor, but he is now less certain of it and, as he works, he gets more and more the impression that there is much in the problem which is not clear. He sees that if the factor is immunity it must be clearly established and must be handed on to successive generations or it will cause a great deal of harm.

He has sought the advice of trained men, who assure him that he is working along the right line, but they question whether immunity can be bred on, for the tendency of all life is to lose resisting power unless it is frequently brought into expression by epidemics or close association with diseased conditions.

Bixler has nothing to sell and is

not seeking fame or glory. He does not want anything to upset any of the present efficiency in the handling of American foulbrood. It was Bixler who, as Representative of the 13th District to the Iowa Legislature, introduced the present bill for the Iowa State Beekeepers' Association, for the eradication of American foulbrood, empowering the State Apiarist with full authority.

Bixler introduced the bill and was able to get it through both houses with practically no opposition. It was hard work, but Iowa has now one of the best of our foulbrood

laws. We bring this out to show that even after years of study and experiment, Bixler still believes that our present treatment for disease is the only way to handle it.

His is simply a whole-hearted attempt to get somewhere in a more effective solution of the disease problem. Let the good work go on, but let us remember that the time-honored route with American foulbrood is still the safest one. Some day someone will tell us with positiveness of a better way. But it is positiveness we seek and not glittering probability.

## Missouri Awake

The State Association met at Linneus, Mo., October 30 and 31. Nine counties were represented: Adair, Grundy, Sullivan, Linn, Livingston, Platte, Clay, Caldwell and Jackson (Heart of America Association). Several other counties sent in their reports by mail. The spirit expressed in both the letters and the meetings was very strong for the passage of a law that would provide for bee inspection, and thereby protect the thousands of Missouri beekeepers against the awful devastation of foulbrood, which is in every county, according to Ex-inspector Lynn.

The county beekeepers' organizations over the state were urged by the State Secretary, at the request of the Heart of America (K. C.) Association to call meetings and decide on the kind of law that we should have. They were all sent a copy of the suggested laws worked out by the Heart of America Association, and later a copy of proposed laws presented by the Scott County Association. Briefly, these two reports propose:

1. That the apiary law enacted by the Legislature of 1921 be amended.

2. That it be a violation of the law to sell, give away, transport, move, or in any way dispose of bees, queens, honey or used equipment without first being inspected by the proper authority, and that no bees or used equipment be imported from another state without a certificate showing they are from a disease-free yard.

3. That the apiarist can use the word "certified" on his honey labels if his bees have been inspected and given a clean bill of health.

4. That all hives (or boxes or "gums") be prohibited except those with movable frames, so that each part may be removed and inspected.

5. That honey be declared to be the nectar of flowers, and any kind

of adulteration forbidden under penalty.

6. That all combs and frames from infected colonies be burned and the hives thoroughly scorched with fire.

7. That provision be made for a commission of three enthusiastic, capable beekeepers, to serve without pay, take the oath of office, and give bond; meet at least twice each year with the state quarantine officer as their secretary; organize, promulgate rules and appoint inspectors and deputies, the rules so promulgated to have the same force as law.

8. That it should be made compulsory for each owner or lessee of an apiary to register the location of his bee yard and the number of colonies therein, not later than April 1st each year.

9. That any person keeping bees should pay a registration fee of one dollar and a tax of ten cents on each colony additional, and that all of this money, except the necessary expense of collection, be used for the control of bee diseases and the promotion of better beekeeping in Missouri.

10. That violators of the law be punished by fine or imprisonment, or both; that the law have "teeth" in it and be enforced as are other laws.

The delegates at the meeting and both the old and new members of the executive board heartily approved the principles of these reports. Several endorsements such as the following were mailed the secretary:

"The Barry County Beekeepers' Association stands squarely back of the proposed laws." C. J. Mutrux, Secretary.

"I heartily endorse the move made by the committee for better bee laws in Missouri."—J. W. Toonay, President Caldwell County Association.

"Don't be afraid to put teeth in our bee laws. Good beekeepers desire a good strong law, and the other fel-



low needs it whether he wants it or not."—Green Carter, Secretary Schuyler County Association.

"Give us a bee law that has 'teeth' in it, and give us bee inspectors that will enforce it. A bee law that cannot be enforced is a joke. If these rules are put into law it will give us money to do some good bee work and make it possible to keep bees at a profit which we have not been able to do under present conditions."—Otto A. Griffith, Secretary Lawrence County Association.

It was unanimously agreed in the meeting that the registration of bees would give us ample inspection, and make it self-supporting; that it would greatly simplify inspection, and that, with a good bee law our beloved honey industry would be saved. As it is, bee conditions in Missouri are deplorable, and going from bad to worse. Foulbrood is running wild and is putting hundreds of beekeepers, both men and women, "on the rocks." Missouri has tons upon tons of nectar going to waste every year and Missouri honey has no superior in the world. "Nature's own sweet" is a delicious, healthful food and growing more popular all the time, and is worthy of adequate protection.

The State Association has 331 members, in fifty different counties and is growing by leaps and bounds, but it must be stronger, and beekeepers over the state are urged to co-operate for the salvation of every apiarist.

Write your ideas or approvals concerning the above suggested rules to the secretary, or to any of the officers. The ones elected for 1925-1926 at the meeting are:

President—Joe Crookshank, Purdin, Linn County.

1st Vice-President—C. Woods, Brashear, Adair County.

2nd Vice-President—C. J. Dray, Linneus, Linn County.

Secretary—Clay T. Davis, Cameron, Caldwell County.

Treasurer—Fred H. Drury, Unionville, Putnam County.

Advisor—Dr. Chas. Sandy, Kansas City, Jackson County.

This executive board was elected and appointed to serve as a committee to draft a bee law embodying the above principles.

With our state aid cut off as it was at the last session of the Legislature, and without bee inspection, we must "hang" together or, as our veteran queen breeder, Mr. Diemer, said, "we should hang separately." Bee registration is being worked in other states and it can be done in Missouri, if enough progressive beekeepers want it.

## Buy Christmas Seals



By Elizabeth Cole.

One hundred years ago "the new bath" was completed in Chambers Street, New York. A daily paper for the year 1825 says: "The subscribers invite the attention and solicit the patronage of the public to their new establishment, which they trust will add another improvement important to health and comfort." Now this was not a Turkish bath. Nothing so luxurious. It was just a public bath, very poorly equipped, we would think, for Saturday nights (or less often probably) because homes and hotels did not have bath rooms one hundred years ago.

The countless improvements for health and comfort that have been added since that time make us forget sometimes what a wonderfully fortunate age we live in. We have grown to accept many of our blessings as a matter of course, and health especially, until we lose it, is often undervalued. Yet we do know that health, after all, is the foundation of success and that the way to maintain health is to prevent sickness.

We have learned that it is necessary to have clean homes, clean bodies, clean cows, clean barns, clean food. We have learned that flies breed where refuse has been allowed to remain unburied, that mosquitoes come from stagnant water, that cattle can have a form of tuberculosis, known as bovine tuberculosis, and that this may be transmitted to children and to animals through their milk. We know now that neglected teeth may be the cause of rheumatism, that tuberculosis is curable, that sunshine and fresh air are excellent medicine and will have a more curative effect than all the bottles of patent medicines in the world. Yet our great grandparents or our grandparents did not know these things and they were as excited on that wonderful public bath as a contribution to health betterment as we were over our first sight of an airplane.

The number of tuberculosis deaths has been decreased in the past twenty years from over 200,000 yearly to less than 100,000, and this decrease has been brought about

largely through education in the ways of healthy living. Publicity in the way of pamphlets, motion pictures, lectures, lantern slides, is one way in which the National Tuberculosis Association in its campaign to control tuberculosis seeks to educate both children and grown-ups. If every citizen would lead a healthy life, teach the family and his neighbor how to do the same, the goal would soon be reached. Perhaps this will come in 2025! Those who are sick 100 years from now may then seem as amusingly out-of-date as "the new bath" of 1825 seems to us today.

In December the National Tuberculosis Association and its affiliated state and local associations will conduct the eighteenth annual Christmas seal sale. Funds from the penny stickers are used in the educational campaign to control tuberculosis. Everyone who buys and sells tuberculosis Christmas seals is helping in this big work.

## Peculiar Effect of Lightning

In July last, at 7:00 in the morning, lightning struck one of the hives of Mr. Bugnon, located in the garden of the school for girls, at Ravoire, Savoie.

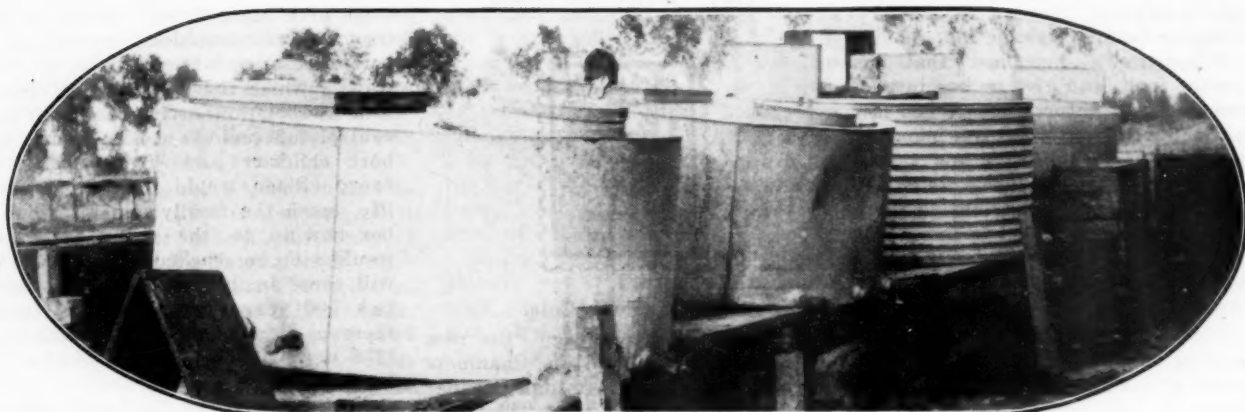
The stricken hive was near a cherry tree. Its roof, covered with sheet iron, without hinges, was thrown 6 feet away; several frames were broken, the foundation was melted entirely from the wires that sustained it and the cells next to the wires were destroyed, while the balance of each sheet remained whole. The wires, which had acted as conductors, were twisted and cut and some parts of them destroyed.

The bees, stunned by the commotion, were thrown to the bottom board, but slowly came to life, although about a third of them did not revive. So the colony is not entirely destroyed, and with a little brood from another colony will return to its normal condition.

The schoolhouse, about 30 feet away, had its electric lamps and meter put out of service. No one was hurt.—H. Didier, in October Apiculture Francaise.

## Selling Honey

The October 10 number of the Literary Digest, page 3, shows, in an advertisement of Dodge Bros. automobiles, the chauffeur of a Dodge auto buying a jar of honey from an old farmer who has a stand of "Honey for Sale." A thing of this kind is not so common that we can pass it by unnoticed.



Two ton storage tanks of G. W. Culver, Calexico, Cal.

## In Sunny Southern California

By Frank C. Pellett.

**B**EESKEEPING is taken seriously on the Pacific Coast and many are extensively engaged in honey production.

California is a state of great contrasts. At a distance we hear much of its mild climate, its orange groves and beautiful flowers. Few visitors are prepared to find such large stretches of desert and such a small portion of the land suited to cultivation. Almost within a stone's throw one can pass from a barren desert to a beautiful garden. Adjoining an orange grove of great value may be a tract of land which is almost worthless. Since one can judge relative values only after long residence and careful study of local conditions, it is unsafe for a stranger like me to attempt to describe southern California except in the most general terms.

In driving from Yuma, Ariz., to El Centro, Calif., one passes over something like fifty miles of the most barren desert on the American continent. It is a region of almost constant sunshine where rain rarely falls and where the midsummer heat is so intense as to be almost unendurable. For perhaps eight or ten miles of that distance one passes over shifting sands where practically nothing grows. Across these sand dunes there is a long bridge, since otherwise it would be impossible to drive over them. A caretaker with team and scraper is constantly kept busy removing the drifting sand from the bridge. Without this attention the bridge would soon be covered so deep as to be impassable. In this dreary waste there is little chance for anything alive to survive any length of time. Here and there

one sees a small shrub which has rooted in a protected hollow, but within a few months a change in the direction of the drifting of the sand is likely to bury it from sight.

Once over the sand dunes one reaches a long stretch of fertile soil with little plant life because of the lack of water. The creosote bush is the one thing which can stand the long continued droughts and continue to thrive. These bushes are scattered far apart and spread their roots widely so as to make the most of the little moisture available in the soil. Much of this area would respond readily to irrigation and produce enormously with the application of water.

### The Imperial Valley

After driving for a few hours in such a region one is greatly impressed by the contrast when coming into the Imperial Valley with its luxuriant growth of alfalfa, its fields of cotton and vegetables as well as eucalyptus, tamarix and pepper-trees. After a region where there are no means of subsistence, to find such a valley with its substantial towns, productive farms and dense population, one begins to marvel at the difference due to the presence of an ample water supply.

This valley, in the midst of the California desert, is one of the most productive areas in America. The soil is rich and the growing season extends almost throughout the year, one crop following another with little regard to the season. At the time of my visit in winter, the weather seemed like May at home, and such vegetables as lettuce and spinach were shipped every day. Eighty-eight carloads of lettuce left the valley one day during my stay



W. H. Goode Calexico, California, and one of his outapiaries.



and at times as high as 100 cars are shipped in 24 hours.

The intense heat of the desert climate in summer drives many of the settlers to cooler regions. Friends say that the thermometer often registers from 100 to 115 degrees in the shade for days, or even weeks, at a time in June, July and August. Temperatures as high as 128 degrees Fahr., have been recorded in the valley.

#### Beekeeping Thriving

It is a good beekeeping region and there are many extensive honey producers in this section. Alfalfa is grown in large acreage and formerly provided the beekeepers with their principal source of surplus. For a number of years alfalfa was grown for seed very generally and with the long growing season big crops were the rule. Of late much of the alfalfa land has been planted to cotton, which produces far less honey, and many of the fields still kept in alfalfa are cut for hay before it is permitted to bloom. J. H. Porter, of El Centro, stated that the Imperial Valley honey now is mostly a blend from a number of sources. Cantaloupes are grown in large acreage and hundreds of carloads of these melons are shipped from the valley daily during the height of the season. Dr. Holt, of the same city, expressed the opinion that as much as one-third of the honey in the valley is gathered from melons in some seasons. Bordering the irrigated sections is much mesquite, arrow-wood and other dry land shrubs which give a substantial flow. The Imperial Valley bee-



T. O. Andrews and son, L. L. Andrews, Corona, California.

keepers usually count on getting something from the desert flora in addition to the cultivated crops.

Much of the honey from this region is amber to dark-amber in color and of rather decided flavor. A striking peculiarity of alfalfa lies in the difference in the quality of its honey when produced in this desert region at low elevation and when produced in the mountains at high altitudes. California alfalfa from this section receives an entirely different grade in the markets from Colorado alfalfa.

The beekeeping is on a more extensive scale than prevails in most places. Apiaries of from 600 to

1,000 colonies are not uncommon. The battery of settling tanks used by W. W. Culver, of Calexico, will give an idea of the amount of honey that some of these men produce. Each of these tanks holds nearly three tons of honey.

The picture showing W. H. Goode in one of his apiaries is typical of the desert. The summer heat is so intense that many of the bees would be lost if the hives were not shaded. The light covering of lath, or in many cases arrow-wood branches, is usually sufficient to prevent the melting of the combs from heat.

The shift that has taken place in the farming in the valley within the past few years has made a decided change in the beekeeping also. When alfalfa grown for seed gave place to cotton and to alfalfa grown for hay, some of the most extensive producers moved away from the valley and others found it necessary to re-locate their apiaries. While good crops still may be expected, I found few men who would not like to see a return to the former conditions with alfalfa seed the big industry of the valley.

#### Over the Mountains

A greater change would be hard to imagine than one finds when crossing over the mountains to the interior valleys in California. Orange honey from this area is famous. In this section and in the southern coast region one finds more men extensively engaged in honey production than in any similar area in America, if not in the world.

Much has been written about the



March roses in bloom at home of Roy K. Bishop.



Frank Maag, G. H. Vansell, C. E. Lush, Roy K. Bishop, Orange, California.

honeyflows from orange, and when conditions are favorable the yields are immense. I learned of 2,200 colonies of bees within an area of one mile square in the orange orchards. When the heavy flows come there seems to be no such such thing as overstocking and a full depth super will be filled within a few hours. At times the nectar is so abundant that men and horses working among the trees get saturated with it.

However, I started this article with the statement that California is a state of contrasts and this applies to the honeyflows. Perhaps a season of great abundance will be followed by several when small crops or failures succeed each other with distressing frequency. The beekeeper is always uncertain until the season is over whether he is to harvest an immense crop or have little to sell. The seasons are long and it often happens that the beekeeper will get something in each of eight or ten months. There are so many different plants from which the bees get a little, that hope is always present, even though the orange and sage, which are of first importance, may fail.

The unusual seems to be the rule in California. T. O. Andrews, who has had a long experience there, had a crop of honey from olives in 1905, but, in many years among the olive orchards, he has never again known the bees to gather anything worth while from that source.

Unfortunately, most of the time which should have been spent in getting acquainted with conditions here, was spent with an attack of influenza in a Los Angeles hotel. Many of the men who are doing things on a big scale were missed as a result. Among the old-timers I did see several whose names have been familiar to readers of the bee magazines for many years. J. E. Pleasants, who lives on a ranch in the mountains near Orange, is one of the few men still living who went to California with the gold seekers of 1849. As a small boy he crossed the plains with his father and has been an active participant in the wonderful change that has come to the west.

T. O. Andrews, of Corona, and M. H. Mendleson, of Ventura, are men whose names are frequently heard in any discussion of California conditions. Both have been in the game so long and have occupied such a prominent place in California honey production that their names have long been familiar to our readers. Mr. Andrews' son, L. L. Andrews, is following his father's footsteps and is among the more active men of the younger generation.

### California Attractions

So much has been written about the attractions of southern California, that it is a threadbare subject. The picture showing the roses in bloom at the home of Roy K. Bishop, a well-known bee man and fruit grower, which was taken in early March, accounts for the popularity of that region. When we of the east have cold and wet, with slush and ice, in southern California flowers are blooming, the sun is shining and the air is balmy. This fact has been so widely advertised that this section has become the playground of the rich as well as a place of retirement for those who are able to rest from their labors and enjoy a few years of ease toward the end of life. Men from every eastern state have gone there to seek comfort or enjoyment in the mild climate. This side of California has been overemphasized, with the result that many places are overcrowded. Too many beekeepers have located in small areas, too many lawyers, doctors and real estate agents have settled in small towns for the amount of business available. Those with established incomes have found delightful surroundings and been happy in the new location, but many

who have their way to make have found too much competition in their particular line.

Beekeeping has impressed many as offering a special opportunity and in several California counties men have entered the business without previous experience, only to be disappointed in the returns. While many of the honey producers there are of the best to be found anywhere, the other extreme is also represented and there are some who are poorly equipped either in experience or outfit for success. This is the natural outcome of the general policy of boosting which has been somewhat overdone and has resulted in attracting people of widely divergent types.

The success of the thorough-going beekeeper in California is too well known to need comment. While it is true that there are seasons of big crops and seasons of failure, men who have followed the business for a long period of years have prospered. Average returns, after all, are what count.

Due to the uncertainty of the seasons, more capital is necessary to make honey production safe than in regions where the crops are more constant.

## All Dead Brood Is Not Foul Brood

We have the following letter from a reader in Missouri:

"I have a strong conviction that a very grave error has been and still is promulgated by authorities in bee lore. I have been a close and interested observer of bees for 50 years, and in my observations have verified nearly all that has been written by the best authorities.

"In a certain season, when brood rearing was accelerated by a warm April, followed by a cold May, my bees were not able to cluster on all the brood, and in their effort to cover all the brood, some of all, and all of some combs, were chilled. The consequences were that I had much foulbrood.

"My hives were the eight-frame Langstroth. This condition left small space for the queen to lay eggs for hatching in warmer weather, so I painstakingly picked dead brood from the cells of the stinking combs and replaced them in the same hives and good results were obtained, considering the check caused by delayed breeding. No disease, no contagion. The foulbrood had every indication of the much advertised disease.

"And now I am ready to declare that I do not believe in the *Bacillus larvæ* theory any more than I believe that my chicks, chilled in the egg, died of disease. I realize that my declaration will fall upon deaf ears and yet the next generation may admit that it might be a saving to discharge our State Bee Inspectors."

There is all the difference in the world between chilled brood and foulbrood. What our correspondent saw was not foulbrood. A very plain difference between chilled brood and foulbrood is that, when the brood is chilled, an entire patch of it dies at the same date, while foulbrood causes larvæ to die here and there, irregularly, through the combs.

Again, the chilled brood has the odor of carrion, while foulbrood has the odor of the gluepot. Foulbrood cannot be picked from the cells, as it sticks to them, but chilled brood can be removed without difficulty.

*Bacillus larvæ* is not a theory, but a fact. It is hoped that our correspondent will never become acquainted with it. When he does he will not be able to pick it out of the cells.

# Factors Influencing the Crystallization of Honey

By J. A. Munro.

**C**RYSTALLIZATION is a state which most honeys assume after a varying period of storage. The length of time required for the granulation or crystallization of honey depends on certain factors, with a knowledge of which it is possible to control, to a large extent, the length of time the honey will remain liquid and also rate of crystallization.

All honeys do not look alike when crystallized. As a rule, light colored honeys assume a white, lard-like appearance, while dark honeys become a straw to amber color. Clover honey may be cited as an example of the former, while buckwheat honey illustrates the latter. Some honeys acquire a mottled appearance while others are even and uniform in color. There is also a difference in the smoothness or texture of honeys, some are fine in texture while others are coarse. The size of the crystals influences this.

With most honeys crystallization occurs in a non-uniform manner. The crystals first appear to be interspersed throughout the honey, the larger portion of them settling to the bottom of the container, until the whole has solidified from bottom to top. Some honeys, however, appear to crystallize fairly uniformly.

Some honeys remain liquid for only a short period of time, while others retain a liquid condition for a number of years. They do not all crystallize at the same rate, and the length of time for honey to complete the process varies accordingly.

## Experimental Work

The purpose of the experiments described herein was to determine the effect of light, storage temperatures, heating and blending on the rate of crystallization of honey. Second, to determine if a correlation exists between the percentage of dextrose in honey and the rate of crystallization.

The honeys used consisted of raspberry honey from Ontario, alfalfa honey from Kansas, horsemint and alfalfa (mixed) from Kansas, clover honey from Wisconsin, sweet clover honey from Kansas, partridge pea honey from Florida, honeydew from Kansas, and sage honey from California. With the exception of honeydew all belonged to the 1923 crop. The honeydew was gathered during the summer of 1922. All samples arrived in 5-pound pails and none showed signs of crystallization upon arrival.

The honeys are classified according to floral origin. As each honey arrived a portion of it was set aside for analysis and the remainder was distributed into ordinary glass bottles of uniform size. The bottles were filled so that not more than one-fourth inch of airspace remained between the cork and the surface of the honey. In all, seven complete sets of bottles were prepared, three sets of which were heated to 160 degrees (Fah.); the others were not heated.

The heating of the samples was accomplished by placing the bottles of honey in a water bath, gradually raising the temperature to 160 degrees and holding for five minutes before allowing to cool. In addition to this three bottles of clover honey were heated to different temperatures. The bottles of clover honey were placed in a water bath and when the temperature of the bath was 120 degrees, the first bottle was removed. The second bottle was removed at 130 degrees and the third was removed at 140 degrees.

Blending was only carried on with two honeys—alfalfa and sage—which were blended in the following proportions: Alfalfa 87½ per cent to sage 12½ per cent; alfalfa 75 per cent to sage 25 per cent; alfalfa 50 per cent to sage 50 per cent. These honeys were heated to 110 degrees to facilitate thorough mixing of the two. Heating of the samples and also blending was done during August, 1923.

Observations were made on the honeys at frequent intervals. Crystallization was judged by outward appearances. The first signs were usually evidenced by cloudiness of the sample or the settling of small granules.

## Light

Two sets of unheated samples were stored under light and dark conditions, respectively. A thoroughly light-proof box was provided for the set of samples kept in the dark, and a box of similar construction and material, except that it had a glass front, was provided for the samples kept under light conditions. The boxes were set side by side on a shelf in the Apiary Building of the Kansas State Agricultural College. The box containing the samples under light was placed so that the glass front faced the window, but not so that any direct rays of sunlight could strike it.

## Various Storage Conditions

As the Apiary Building was of frame construction and readily affected by outdoor weather changes, it was considered to be fairly typical of what might be termed "variable storage temperatures." This building was heated on cold days with a coal heater, consequently the daily variations in temperature were considerable. Thermograph records were taken from September 2, 1923, to March 16, 1924. The maximum daily range of temperatures in September were 47 degrees; October, 56; November, 52; December, 72; January, 93; February, 91, and March, 76. The lowest temperature recorded for September was 56 degrees. October, 30; November, 45; December, 12; January, 10; February, 12; and March, 27.

Observations were conducted on a set of unheated samples, a set heated to 160 degrees, clover honey heated to different temperatures, and the alfalfa and sage blends. All samples were placed together on a shelf in the Apiary Building.

## Cellar Storage Temperatures

A set of unheated samples and a set of samples heated to 160 degrees were placed on a shelf in an underground concrete cave. This cave had about two feet of earth over the roof, which protected it considerably from outdoor temperature fluctuations. Temperatures were taken with maximum and minimum thermometers. Temperatures for September ranged between 73 and 69 degrees; October 73 and 61; November, 63 and 51; December, 59 and 50; January, 52 and 35; February, 41 and 35; and March 44 and 36. The daily fluctuation of temperatures was small, probably never exceeding more than 5 degrees.

## Room Storage Temperatures

A set of unheated samples and a set of samples heated to 160 degrees were placed on a shelf of an interior store room in the Entomology Building. Since this room was kept at a fairly even temperature of 65 to 70 degrees, except over Sundays, when the building was allowed to cool, it was considered to be fairly typical of what might be termed "room storage temperatures." The building was steam heated. Although daily temperatures of this room were not taken, it is fairly safe to state that the temperatures never went below 45 degrees even in the coldest weather.



The samples which were exposed to light during the period in which they were under test, crystallized at the same rate as the corresponding samples in the dark.

#### Storage Temperatures

The difference in the beginning of the crystallization of the various unheated honeys, under the three storage conditions, did not vary markedly. Probably this was due to the fact that the temperature conditions of the three places were nearly alike during the early part of the test. The honeys that started to crystallize late under cellar conditions required a longer period to complete crystallization than under variable storage temperatures, and the samples under room storage temperatures required the longest period of the three. As might be expected, the heated honeys did not show signs of crystallization till late in the test, and the differences regarding temperature conditions of the three places varied the greatest during the period of the test. Under variable storage temperatures, four of the eight samples heated to 160 degrees were in various stages of crystallization, two of which became solid. Under cellar conditions, two of the eight samples were in various stages of crystallization, but neither of them were solid by the end of the test, and both had started to crystallize at later dates than the corresponding samples under variable storage temperatures.

Under room temperatures, only one sample started to crystallize, and it was in an unfinished state by the end of the test. It also started crystallization later than the corresponding samples under variable storage temperatures and cellar conditions. For example, the three samples of alfalfa heated to 160 degrees differed in their beginnings of crystallization in the following way, depending on the place of storage. Under variable storage temperatures, the sample started to crystallize January 5; under cellar conditions, on February 18, and room storage temperatures on April 9.

It would appear that crystallization is influenced both by storage temperatures and by heating. When the different places of storage were fairly similar in temperatures, the corresponding samples of honey crystallized at similar rates, but when the storage temperatures changed markedly between the three places, the rates of crystallization also changed. The Apiary Building had the lowest temperatures and the widest range of daily temperatures and crystallization made the most rapid progress there. Crystallization went on at an intermedi-

ate rate under cellar conditions, which was second in regard to low temperatures, and made the slowest progress in room storage temperatures, which stood third in regard to low temperatures.

A correlation appears to exist between the temperature of heating clover honey and its beginning of crystallization, also between the temperature of heating and the length of time required to complete the process of crystallization. The main effect the heating had on the honey probably was in the removal of the excess air which it contained. The amount of air expelled depended on the temperature to which the honey was heated, and naturally the highest temperatures caused the greatest amount of air to escape. This might be expected, since heating decreases the specific gravity of the air and also lowers the surface tension of the honey, thus enabling the air particles in the honey to rise more readily than they would if the honey had not been heated.

It is a common observation that air incorporated in honey hastens crystallization. It is possible that around each air bubble a nucleus of crystallization occurs.

#### Blending

The effect of blending alfalfa with sage honey was to cause the blend to remain liquid for a longer period than the alfalfa alone. Probably the main effect of blending is to change the ratio of sugars. Since the sugars in honeys consist mainly of dextrose and levulose in varying proportions, it is safe to assume that crystallization is influenced by the proportion of one sugar to another. Alfalfa honey is high in dextrose, while sage is low in dextrose and correspondingly higher in levulose. Dextrose is an easily crystallizable sugar, while levulose as it occurs in honey probably never crystallizes; consequently, when two honeys, such as alfalfa and sage, are mixed together to form a blend, it will change the ratios of the sugar so that the blend is different from either of the honeys which it contains.

The dextrose contents of the raspberry honey and alfalfa honey were practically the same. However, there was a slight difference which made the raspberry honey stand second in dextrose content and alfalfa first.

If other factors had not entered in, it is probable that alfalfa honey would have been the first to crystallize. The raspberry honey had been exposed to Northern Ontario temperatures previous to starting it in the test. Also, having come a longer

distance than the alfalfa, it doubtless had been shaken and jarred considerably more, thereby hastening the beginning of crystallization. The alfalfa honey, which was highest in dextrose, was second to begin crystallization and required the shortest period of time to complete the process. The raspberry honey stood second in amount of dextrose, but was first to begin crystallization and was second in length of time to complete the process. In all honeys, as the percentage of dextrose increased, the number of days for the completion of the crystallization process decreased. But, as the amount of dextrose decreased (with the exception of raspberry honey) the number of days for crystallization to begin increased.

#### Conclusions

1. Diffused light does not influence crystallization.
2. Low temperatures combined with extreme variations in daily temperatures hasten the beginning of crystallization and also shorten the period of time required for its completion.
3. Air incorporated in honey hastens the beginning of crystallization, and also shortens the period required.
4. Crystallization of a blend of two or more honeys is influenced by the ratio of crystallizable to non-crystallizable sugars which it contains.
5. A correlation exists between percentage of dextrose in honey and the number of days from extraction until crystallization begins.
6. A correlation exists between percentage of dextrose in honey and length of time required for the completion of the crystallization process.

#### Honey For Belt Driving

We were having a hard time getting the belts to our gin to give the proper tension and not slip. We tried a number of belt dressings, but all failed. My uncle, Mr. J. T. Evans, a large Prairie farmer, conceived the idea of mixing some honey with cup-grease and trying it as belt dressing. I had some dark honey that I could not sell, so we tried one part honey to one part grease. This mixture gives better tension and we are no longer bothered with belts slipping.  
Prairie, Miss.

#### Superior Honey

We are in receipt, from the Superior Honey Company, of two sections of comb honey, by parcel post. The honey is surely superior in every respect. That is the way to secure customers.

# Personal Recollections of the Editor

## Queen-Rearing

THOSE who are patient enough to read what I write have already noticed that I have a soft spot in my heart for the queen breeder who offers his queens too cheaply and finds himself unable to fill all his orders, either because the weather has been unfavorable or some of his operations have turned out unfavorably, owing to shortage of crop or something else. The fact is that I have been there myself and cannot help pitying the man who tries hard and fails in what he has undertaken, often without his being directly to blame.

We began raising queens for ourselves and for sale, in the Sixties. We used both nuclei made by dividing some Dadant frames across the center, making two frames out of one, and also with little miniature mating boxes. We did not like the latter, although they were very economical, because it was so easy to have a failure and find the little box empty. The advantage of the divisible frame was that, at the end of the season, it could be put together again and used in full colonies, so that there would be no loss in breaking up the nuclei. Many of the present-day breeders have divisible frames which may even be cut into four pieces, so that one full frame will make four nucleus frames.

The greatest stumbling block in our way was the proper fertilization of the queens, so as to secure pure bees. Think of the difficulties when all the bees in the vicinity were common black bees and we had only a few colonies of bright Italians. But my father was a man of decision. He concluded that the only way to overcome the difficulty was to get the bees of our neighbors Italianized. They were mainly in box hives or in gums. But this was no obstacle. He sent me around to all the neighbors who had bees (I was about 19) to offer to Italianize their colonies for \$1 each. As the yellow bees attracted the attention of many people, and as they knew that a good Italian queen sold for \$5 or more, it was not difficult to interest them. I don't remember a single one of them that hesitated to accept, although in one or two cases we had to take bees in payment. The plan was to rear queen cells from our pure stock, and on the ninth day go to the apiary to be Italianized, drive the bees out of a hive, find the queen, kill her, put the bees back into the hive, and go to the next colony to do the same thing. The following day, queen cells were

brought to each of those colonies. There was very little trouble. Of course, some of those young queens mated with black drones, but their bees were good honey producers and their drones were pure.

### Odor of Queen

It was during one of these operations that I had the experience, mentioned by me somewhere, of some bees following me a half mile, which I traveled on horseback, because I had killed their queen between my fingers and the odor of the queen must have been strong enough to enable them to follow me. This was at a small apiary, owned by the school teacher, Mr. Crane, and located exactly opposite the present site of the big dam, at the foot of the bluff of the Mississippi River. I went to the postoffice, thinking they would lose me, but when I came out of the postoffice, a half dozen bees were still looking for me, not angry, but peculiarly interested in my fingers. Since that time, I have been a very hearty believer in the "odor of the queen." There is more to the queen odor than most people imagine.

Well, by securing many Italian bees and Italian drones, in our vicinity, we began to succeed in queen-rearing and selling. But the queen business is a bad thing, at best, because so many things can happen to a queen. She may die on the way; she may be damaged on the way so as to become a second rate queen (Doolittle says so); she may not prove as prolific as expected by the purchaser; her bees may not be as bright colored as expected; her drones may not have all the yellow color expected; if her colony dies the following winter, she may be accused of not being of a hardy race, etc. But one makes some good friends, if the purchaser happens to get a really good queen. Of course, if we could do it, they would all be good queens.

### Controlled Matings

Fertilization in confinement was also our hobby, for a little while only, as two or three trials convinced us that the first thing a queen would do, when turned loose inside of a room with glass, was to fly to the glass and struggle there. Ditto with the drones. They lost all idea of seeking one another and only sought flight.

Forced fertilization we did not try, because we had heard of others doing it and their very statements looked dubious to us. Good friends

of ours, later, tried this forced method, driving the sperm of the drone into the vulva of the queen, with a small glass dropper or other contrivance. I was even shown a queen, upon which great hopes were built, as she appeared to be quite "pregnant." But it was only a mishap and her swollen condition proved to be an ill-managed operation from the owner. Forced fertilization may succeed some day, since we even succeed in flying through the air without wings, but I am much afraid that it will only be accidental.

All, or nearly all, our work in queen-rearing was carried on long before the Doolittle method was invented; so we never reared queens as they do now, in artificial cups. Probably we might have kept on, rearing queens, if this rapid method had been in existence. But, in our northern countries, there is much more to be made out of honey production than out of queen-rearing, and I am satisfied that the man who succeeds in queen-rearing, north of the line of Dixie, would succeed much better in honey production.

In rearing queens, I became convinced that the quality of a queen does not at all depend upon her looks, although I acknowledge that, if a dark queen and a bright queen were put before me, I would select the bright one. But I have had some of our very best queens, dark and comparatively small, although very active.

Of late years we have been buying our queens, because our people do not think they can afford to spend the time to rear them. But it is really worth while to produce our own queens, from our own choice stock. If I were to live my life over again, I would not rear queens for sale, but I would surely produce both my own queens and my drones, from the choicest stock that previous years' crops would indicate.

In our business of queen-rearing for sale, we probably had a little more difficulty than the average breeder in giving satisfaction, because, as we began importing bees from Italy within a very few years, the customers expected a little more from us than from the average breeder; when the fact was that the man who continued to breed from yellow stock regardless of other qualities, came nearer to satisfying the customer than we did. They now have reached the establishing of almost a special American Italian bee and the importation of queens is



of a very much less moment than it used to be. Yet, if you give me my choice, I will still give the preference to the leather-colored Italian such as we used to import 40 years ago.

#### Troubles of Breeders

The greatest misery for the queen breeder is caused by the wiseacres who can tell you, at first sight, how old a queen is and whether she is purely mated and prolific. Here is a card from one of those "sages," which was so full of knowledge that we preserved it. It is now 50 years old and the ink is almost faded. We had sent him one queen and she was damaged on the way so that she could not lay, so we sent him a second. He wrote:

"The queen came to hand on Friday eve., all well. She was introduced all right. She is about 3 years old and worth about 50 cents, the bees are superseding her already. The other one was hurt in shipping, probably, as she could not insert her abdomen in the cells, but kept trying; at last she died. That is the record. I shall show this queen as much as I please; I am not afraid of the bees hurting her. I am a bee

master second to no one. Respect.,  
J. S. D., June 2, 1875."

Sending queens by mail was begun by M. Quinby in 1867, as mentioned by him in April, 1868, page 199 of the American Bee Journal. Father tried it, but it was expensive, for no one up to that time had had the idea of putting bees in such small packages as are now used. Then there was quite a great deal of loss, for some mail agents, thinking mailing bees had no business in the post bags, would throw them out of the window. I have here an answer from C. Cochran, Jr., Superintendent of Mail Depredations, to my father, September 4, 1871, concerning loss of queens in the mail. It says:

"Sir: Your letter of the 31st ult., is received and the matter to which it refers, viz.: the loss of queen bees sent by mail, will be placed in the hands of a Special Agent of this department for investigation.

Very Resp'y,  
C. Cochran, Jr., Supt."

The reader thus can understand the numerous difficulties of the beginnings of queen-rearing and shipping.

## A Local Bee Meeting

At a recent meeting of the Fusit bee club I was appointed to write up the last meeting and send the report to you, at least I offered, 'cuz the other fellow that could write wasn't there.

There was quite a lively discussion about several bee matters, for instance, someone spoke about that new book of Dallas Lore Sharp's on "The Spirit of the Hive." Hank Larrabee is rather deaf and he must have misunderstood, for he got up and said that "he didn't need no book on getting spirits from the hive." He had a good receipt for making it if you could get some good champagne yeast. It was quite a while before the rest of the club put away their pencils and listened to old Nope Nolan talk on how he invented the honey extractor. Nope said that he discovered it quite by accident and before de Hrushka ever thought of it. He said when he was young he was always trying to invent some mechanical contrivance that would save a lot of work, like the self-scratcher for his dog. Said he often fooled around his father's bees, out in the orchard, and noticed that in the hives facing the east, where the early morning sun shone into the entrances, the bees worked the earliest. On the other hand, in those hives

facing west, receiving the benefit of the evening sun, the bees worked later. So he devised a way to get more work out of his bees. He set a post in the ground and fixed a revolving platform on it. This would rotate by means of clockwork. Upon this platform he set a hive just to try it out. It was so timed and adjusted that at the beginning of the day the hive faced the east to get the full benefit of the morning sun. Then it swung slowly until at noon it faced the north, giving the bees plenty of shade during the hottest part of the day. Late in the day it received the light from the setting sun as the hive swung towards the west. In this way, Nope said, he prolonged the working day of the bees at least two hours. He said that he always kept the clockworks well greased so it kept the ants away. It worked fine for a time and was the envy of all his neighbors, when all at once something went wrong with it just when the hive was full of honey. Instead of rotating slowly, as it should, it whirled around and around at a great rate of speed until the clockworks ran down. On looking into the hive to see what damage had been done he found an unexpected sight. Most of the bees were still dizzy, the eggs had been scrambled

and the honey had been thrown out of the outside combs that were uncapped. From this little experience he conceived the idea of the honey extractor. The reason he didn't get a patent on it was that he was broke, and anyway the bees belonged to his father.

After the discussions the club decided to have an appropriate dance before they adjourned, and so, led by the college boys and girls, they executed the "wag-tail dance." I'll say it was appropriate.

Ima Droghn, Secretary.

## Sweet Clover Acreage in Nebraska

Sweet clover acreage has increased 814 per cent in Nebraska since 1920. Figures compiled by the state federal division of agricultural statistics show an advance from 30,227 acres in 1920 to 245,994 acres in 1925. The present area is 101,000 acres above last year, a gain of 69 per cent. Sweet clover is grown in every county in the state. Custer County leads with 16,946 acres, followed by Boone County with 13,292 acres. The bulk of the crop is grown in the eastern third of the state, but the crop is taking well in western counties outside of these in the sand hill region.

Sweet clover, once considered a weed, has gained an important place among Nebraska crops. Its value for pasture, hay, seed and as a soil builder is giving the crop a permanent place in Nebraska agriculture. Even alfalfa, one of the state's leading crops, did not gain favor as rapidly as sweet clover. The increase from 30,227 acres in 1920 to 245,994 acres at present is more than an incident; it is of importance to Nebraska as an agricultural state.

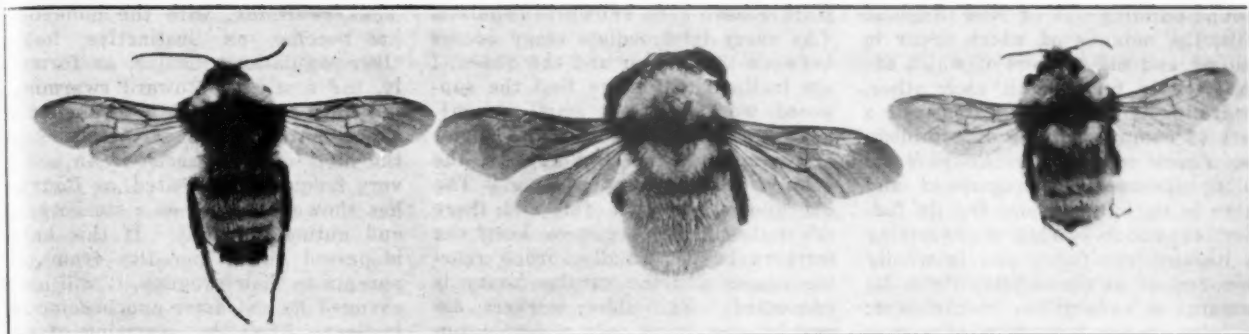
Aside from the place sweet clover holds in crop rotation, and as a soil builder, its most important use is for pasture. Next in order is its value as a seed crop, and last as a hay crop. While 40 per cent of the acreage was cut for hay last year, sweet clover cannot compete with alfalfa as a hay crop.

The sweet clover area for 1920 was 30,227 acres; 1921, 53,539 acres; 1922, 64,740 acres; 1923, 122,320 acres 1924, 144,787 acres, and along with the marked advance between the years 1920 and 1924, the 1925 area shows an increase of more than 100,000 acres.—(Nebraska Farmer.)

## Wintry Weather in New York

October was a wintry month. Snow fell three times, blanketing everything in most of the state, and in northern New York, these reached the proportions of blizzards. Same in Illinois.





The three castes of the bumblebee (*Bombus fervidus*); male, female, worker (from left to right).

## The Origin of Swarming—Part II

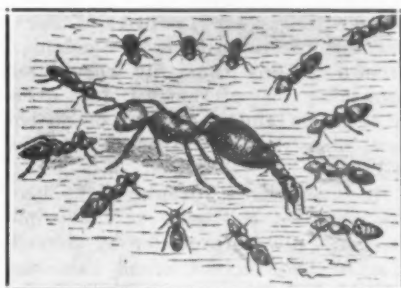
### The Mating-Flight and Swarming In the Different Groups of Social Insects

By John H. Lovell.

If we restrict our endeavors to discover the origin of swarming to the honeybees, we are likely to find the problem extremely difficult, since both the mating-flight and swarming have become much more highly specialized in this species than in the primitive groups of social insects. The investigation of the economy of other groups of social insects should, then, help us materially in our search. Comparison is a most useful key in unlocking the secrets of nature. "The education of a naturalist," said Agassiz, "now consists chiefly in learning how to compare." Most insects live solitary lives—the female alone providing for the offspring. But in many instances she gives it no care further than laying her eggs in a favorable situation. Passing over a number of genera in various orders, in which social life is more or less foreshadowed, highly specialized insect societies are represented only by the white ants or termites, the true ants, the social wasps, and the social bees. Insect colonies have thus arisen independently more than once.

The white ants, or termites, belong to a much lower order (*Isoptera*) of insects than the ants, wasps, or bees. The species are numerous and the colonies may range from a score or two of individuals to millions. Like the wasps and bees, they are divided into three castes—fertile males and females, workers, and male and female soldiers—but each of the three castes is again subdivided. The nest, which is sometimes ten feet high, is built in the soil. The nuptial flight consists of myriads of winged males and females, possessing the sense of vision, flying forth from the nest, as do the ants; but, unlike the ants, mating does not take place in the air. After the male and female have alighted upon the ground and re-

moved their wings, they unite in digging a cavity in the soil, after which mating occurs and from this small beginning in time a new colony arises. It has been estimated that a queen may lay ten million eggs in a year. The nuptial flight of the white ant is thus not strictly a mating-



Ant queen surrounded by a company of workers.

flight, since mating does not take place in the air. This habit has probably been acquired in other groups of social insects because the act is made more certain, if it takes place before the sexes have a chance to become separated. It is probable that fecundation and dispersion occurred in a nearly similar way in the primitive stages of all social insects; and that where the colonies were weak and small, as is usually the case in annual colonies, swarming was wholly unknown, as it still is in our northern bumblebees and social wasps.

All of the species of ants, of which there are some 3,500 species, are social, and the number of inmates in a colony, according to the species, ranges from 30 or 40 to hundreds of thousands. There are queens, males and workers (except in the parasitic species); but two or more forms of each caste occur in part of the genera. The marriage flight of the ants has been frequently described, and

may be easily witnessed in the case of the little red ant so common in our lawns and pathways. On a warm, calm afternoon late in August myriads of males and females pour forth from their nests, filling the air and dotting the surface of nearby streams. The males are much smaller than the females, and fecundation takes place during flight, as with the honeybee. The males fall to the ground, where they soon die or are destroyed. The fertile queen, after she descends to the earth, breaks off her wings, digs a small cavity in the soil beneath a stone or log, and lays a small number of eggs, which develop into worker ants. In a couple of years, if all goes well, this little nucleus may grow into a powerful colony.

The termites and ants live in chambers and burrows under ground, and one result of this manner of life is that the workers have permanently lost their wings, while the queens voluntarily deplete themselves. For this reason the workers can never take part in the nuptial flight, and the queen, after fecundation can never make a second flight. In comparison with the ants the wasps and bees are aerial insects. As with the termites, the nuptial flight of the ants provides for both mating and wide distribution.

But ants also form new colonies by swarming. "The queen ant," says Wheeler, "unlike the queen honeybee, is never hostile to her own queen daughters, and in many species of ants these daughters may return after their marriage flight to the maternal colony and take a very active part in increasing the population. When a colony contains a large number of fertile queens and grows too large, a company of workers with one or more queens may depart and establish a new nest not far

away." This is illustrated by the mound-building ant of New England hills, the mounds of which occur in groups, and the workers of which are on friendly terms with each other. Swarming is thus the departure of a part of colony, capable of establishing a new nest, when the parental colony becomes over-populated and there is no longer room for its further expansion. This is swarming in its simplest form, and is wholly independent of the nuptial flight. Its stimulus is congestion, in the nest; its purpose the formation of a new colony. It is not unlike colonization in the human race. England, Germany and Italy have repeatedly sent portions of their surplus population to other lands in order to relieve the congestion at home. If over-saturation is permitted, and the food supply is insufficient for the population, then thousands are likely to die of hunger, as is so well, or so unhappily, illustrated by India and China.

The social wasps of the genus *Vespa* build round paper nests which are suspended to the branches of shrubs or the eaves of buildings. There are three castes as in the honeybee, and the queen is fecundated only once. The nuptial flight, as in the ants, takes place after mid-summer. The virgins are much larger than the males, and mating occurs during flight. The males soon die, and the fecundated queens hibernate during the winter, as do the newly-mated queens of the bumblebees; and in the spring establish new colonies. With the approach of cold weather the old queen and the workers, which have remained in the nest, gradually perish. In the nests of our northern social wasps the number of individuals is comparatively small and swarming does not occur; but in the tropics the colonies become perennial and contain thousands of wasps. When the colony becomes very large, swarms consisting of many workers and queens leave the old nest and establish new colonies. But in northern latitudes the nuptial flight occurs and the swarm-flight is wholly unknown. In general, swarming is characteristic of perennial colonies which are large and strong.

In mid-summer or early autumn a bumblebee colony in the temperate zone produces males and virgin queens. The young males, according to Sladen, leave the nest as soon as they are able to fly, and do not return to it again for either food or shelter. For a few weeks they fly from flower to flower, but perish soon after the virgins are fecundated. The young queens sometimes return to the nest with loads of pollen, but they soon leave it for good and hibernate during the winter. Males are frequently produced

by laying workers, and a male and a worker have been known to copulate. (As every intermediate stage occurs between the worker and the queen, I am inclined to believe that the supposed worker was a small queen). "With the departure of the males and virgins the closing days of the colony are fast approaching. The old queen begins to fail and there are not sufficient eggs to keep the workers busy. Finally, brood rearing ceases and the surplus honey is consumed. The older workers die one by one, until only a few dozen remain. On a night a little colder than usual the queen grows torpid, and, her life work finished, her sleep knows no awakening."

In northern regions the swarm-flight does not occur, only the mating flight, as has been described. The total number of males and queens raised varies from 100 to 500—on an average there are two males for every virgin. The number of workers varies from 200 to 300. The colony is evidently not strong enough to provide food for winter or to send out swarms. But in South America bumblebee colonies become perennial and populous, and in consequence send forth swarms of workers and queens to form new colonies. In the groups thus far considered swarming is a remedy for over-population, and is present or absent according to the strength of the colony.

It is generally recognized by beekeepers that the issue of the prime swarm is always preceded by congestion of bees in the brood chamber, attended by various resulting unfavorable conditions, as insufficient ventilation, too high a temperature, and lack of cells in which to store honey or rear brood. External factors may modify the effect of the internal factors, as unfavorable weather and the time and rapidity of the honeyflow. If white clover fails to yield nectar, the colonies may not become strong enough to swarm. By making use of preventive measures, as the giving of empty combs and enlarging the entrance, swarming may in a measure be controlled. In the case of the honeybee, as with the social insects previously considered, over-population is the stimulus to swarming.

But the nuptial flight and swarm-flight of the honeybee have become very highly specialized, and departed widely from their primitive form. The nuptial flight still serves for fecundation, but not for distribution. Hence the formation of new colonies and the continuation of the species has become dependent on the swarm-flight. Colonies which do not swarm leave no descendants and presently disappear, while strains which swarm

freely are the most likely to survive. Thus swarming, with the honeybee, has become an instinctive habit. Over-population remains, as formerly, the first step toward swarming; but once this instinct is awakened it subordinates all other activities of the hive. With insects, if an act is very frequently repeated, as Bouvier has shown, it becomes a stereotyped and automatic habit. If this habit is passed on by heredity from the parents to their progeny, it will have changed its character and become an instinct. Thus the swarming of the honeybee is controlled by two primary factors—congestion and hereditary instinct.

It is in afterswarming that the swarming instinct manifests itself in its full strength. Since the more swarms a colony can cast, capable of maintaining an independent existence, the better it is for the species, even though the maternal colony perish, swarming may become an obsession or a "fever." "The swarming fever," says Dadant, "is a very appropriate name. After it has once taken possession of their little brains, no number of preventives will prevent the execution of their purpose except unfavorable weather. We have divided a colony into several nuclei without avail, each nucleus swarmed in spite of its weakness." In afterswarming, congestion of bees, which was the primitive cause of swarming, may be wholly absent, and a colony may swarm excessively after it has been greatly weakened by the departure of one or more swarms. It is the all-powerful instinct of the preservation of the species, developed through thousands of years, which has been set free and which nature constantly tends to magnify.

The swarming impulse may vary greatly with different colonies, in some instances going to extremes, in others manifesting itself but feebly. Even the mother instinct, which leads an animal to protect its offspring at the expense of her life is not equally strong in all individuals, and in captivity may become so vitiated that the mother may destroy her own young. So the conditions of a colony of bees under "domestication" may differ from those of the wild state. Sometimes when a virgin queen flies out of the hive in which she has been placed for the purpose of mating, the workers may "swarm out" with her, and the nuptial flight take on the appearance of a swarm-flight; but this is clearly an exception and has no bearing on the problem as a whole. From all the preparations for swarming the sexual instinct is absent. The dominating impulse throughout is the desire to establish a new colony.

# Buckeye Poisoning In California

tribution from the Department of Entomology and Parasitology Branch, College of Agriculture, Davis, California

By Geo. H. Vansell.

**B**UCKEYE poisoning in bees is a malady peculiar to certain parts of California. From the present observations and experiments it is not a hard matter to explain the many conflicting reports of this trouble which have so long been puzzling. We still do not know the specific chemical or chemicals which are responsible for the effect upon the honeybee, but we do know that the active principle is obtained from the California buckeye (*Aesculus californica* N.).

## Effects of Buckeye on Bees

The effects of the products of this plant upon the hive bee vary from slight paresis to absolute destruction, depending upon the amount of materials collected from it. When the bees work buckeye almost to exclusion the annual and less deeply rooted plants fail to blossom or to yield nectar freely. It is under these conditions that the deadly results become most apparent.

The effect upon the whole colony is most demoralizing. Many of the young worker larvæ are killed outright and are devoured by the adults or thrown out of the hive. Others develop into adults of very abnormal appearance, being wholly unable to fly on account of the crumpled condition of the wings. The legs are often abnormally small and the whole body may be dwarfed. Queen and drone brood are affected similarly.

Many of the adult field bees feeding upon buckeye become very much swollen, as in a dysenteric condition. Their intestines are gorged with a very sour melodorous yellow substance to such an extent that a slight pressure will cause them to burst with a snap. Many of the affected bees become shaky and are picked almost free of hairs by other workers so that they appear shiny, as in the case of paralysis. Apparently none of the poisoned mature bees or the emerging young are able to fly and

they crawl out of the hives by hundreds and die. I have seen dead bees in front of single colonies to the depth of 3-4 inches.

The bee's sense of odor appears to be destroyed by buckeye to such an extent that robbers gain easy access. A colony of affected bees moved from the buckeye area into a valley location usually develop a case of robbing within a short time.

One very serious aspect of this malady, even in slight cases where it otherwise might not be serious, is that the bees nearly always try to supersede the queen (even though she be young and good). They usually fail in their attempt because the emerging queens are deformed and unable to fly. In cases where mating does take place these buckeye queens are poor layers.

## The Distribution of Buckeye in California

The general range is shown in the accompanying map. The two places in which the most buckeyes and the severest poisoning occur are shown by shading. Within its range there is great variation in the number of plants found in a given area. It is apt to occur in great patches where conditions are favorable to its growth. Between the patches there may be few, if any, buckeye trees. The species appears as a small shrub in its northern limits, but in central California it is a very large tree not uncommonly 50 feet in height with an equal or greater spread. The two areas in which it occurs in greatest abundance are in Solano and Tulare Counties.

The following information is given concerning the California buckeye by George B. Sudworth in his "Forest Trees of the Pacific Slope."

### "Distinguishing Characteristics."

The California Buckeye (*Aesculus californica*), Nuttall, is shrub-like; it has several stems from 10 to 20 feet high and from 3 to 6 inches through, growing together from a common root. Sometimes it is from 25 to 30 feet high and from 8 to 20 inches in diameter, with a short, smooth, gray—often whitish—trunk and a flat-topped, open crown of wide-spreading limbs.

"The chief usefulness is in forming considerable open but helpful cover on exposed dry, rocky foothill slopes, in gulches, and along hill streams where few other trees grow.

(I have seen specimens of this tree 45 feet in height, with a trunk diameter of 24 inches. The tree



The area between the two heavy lines roughly shows the distribution of *Aesculus californica* N. It extends out into the valleys, outside of ornamental plantings, only along creek beds where the seeds have washed from above, and into the Sierra foothills along stream canyons.



makes its maximum growth in sheltered hillside canyons. The wood is so soft that trees in the open are very subject to wind damage and stunting.)

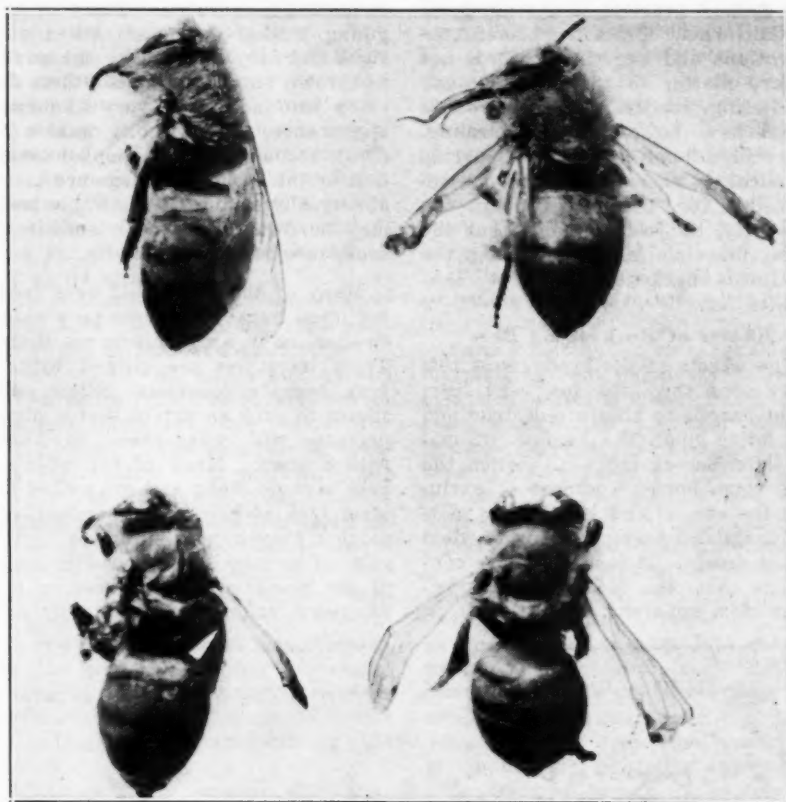
**"Range—California,** from Sacramento River in Mendocino County along coast ranges to San Luis Obispo County; western foothills of Sierras to northern slopes to Tejon Pass in Kern County; Antelope Valley north of San Gabriel Mountains in Los Angeles County.

**"North Coast Ranges.**—Lower foothills (500 to 2,000 feet) northward into Mendocino County, Shasta County, at least to Redding in Sacramento River Valley. Locally noted on Russian River (Mendocino County); in canyons and on hills near Ukiah; at Lewiston and on Canyon Creek (Trinity County); hill between Shasta (town) and Whiskeytown (Shasta County); lower hills of Stony Creek National Forest; valleys south of Clear Lake (Lake County); Mount Tamalpais, Marin County.

**"South Coast Ranges.**—Probably throughout lower foothills to San Luis, Obispo Mountains, but noted only on seaward range west of Santa Clara Valley (500 to 1,500 feet), where it is common; near Santa Cruz; foothills of Santa Cruz Mountains; near Monterey, on foothills just above Carmel Mission; Monterey National Forest (Santa Lucia Mountains) at 600 to 4,000 feet, but not common, in basins of Sur, Carmelo and Arroyo Seco Rivers; San Luis Obispo National Forest, only in basin of Salinas River.

**"Sierra Foothills.**—Common from Shasta County to Tehschapi Mountains; in the north, at 500 to 2,000 feet, and in the south, at 1,000 to 3,000 feet. Locally noted in Shasta County; near Chico (Butte County);

near Iona (Amador County) at 200 to 5,000 feet; Stanislaus National Forest, throughout the lower belt; Northfork and vicinity (Madera County); South Fork of King's River, below Millwood; Kaweah



Malformations of the emerging adult bees caused by feeding upon or being fed buckeye pollen and nectar.



Whole hillsides are covered with buckeye, often to the exclusion of all other trees. The experimental tent is at the bottom of the slope.

River, foothills; Kern River Basin, below oaks; at Havilah; Kernville to Walker Basin.

**"Southern Cross Ranges.**—Abundant in Tehashapi Mountains in canyons and nearly up to summits; extends eastward and southward to the north slopes of Santa Barbara Mountains above Antelope Valley, where it occurs in basin of Elizabeth Lake at 2,400 to 4,500 feet, reaching the foot of Sawmill Mountain. Locally noted from Havilah to Fort Tejon and in Canada de las Uvas, and reported on south slope of Santa Barbara Mountains in Matilija Creek Basin.

**"Occurrence.**—Foothill and lower mountain slopes; frequent on borders of streams and canyon sides, in dry, gravelly soils. Forms spreading clumps interspersed with scrub oak, redbud, occasional live oak, blue oak, and gray pine manzanita, and other chaparral brush; largest in sheltered coves and gulches."

**Variation in Poisoning With Season and Location**

The season of 1923-24 was very short in rainfall over most of the

buckeye area. Many apiaries suffered heavily and our experimental colonies were often a total loss. The present season (1924-25) brought a normal rainfall to California north of San Francisco, which resulted in a superabundance of plant blossoms. Under this condition there was scarcely any occurrence of poison-

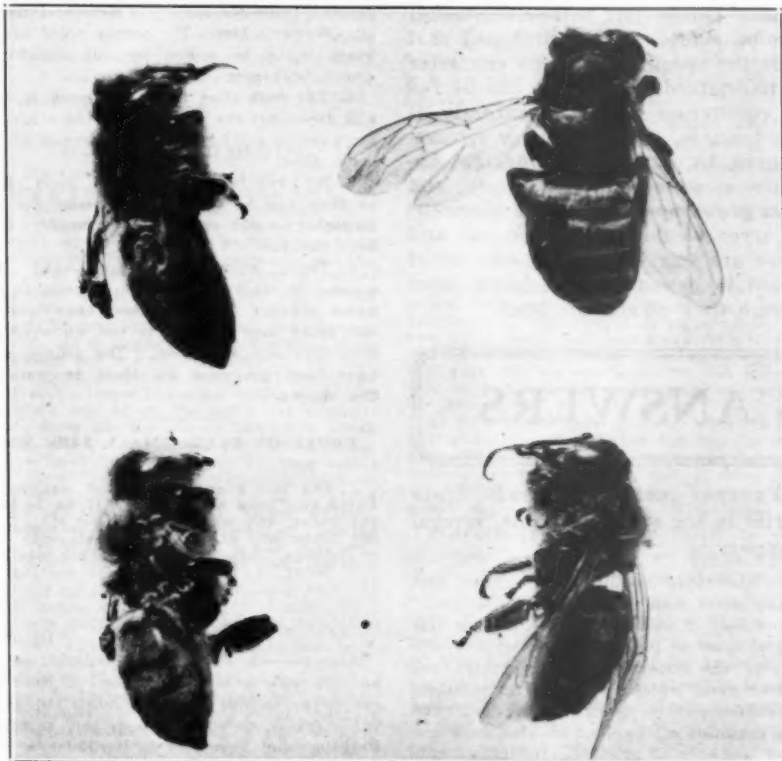
The Napa Valley gives good illustrations of the variation in nectar flows, buckeye, and poisoning in bees. A few miles northwest of Napa City, at the lower location of Mr. D. O. Taplin, enough other nectar plants are present (a honey crop is made every year) to dilute the nectar so that no serious poisoning

has ever resulted. Also buckeye trees are not nearly so prevalent there as in many other locations. Above St. Helena in the location of Mr. A. Dickenson, the situation is different—much more buckeye is in reach but in some years other nectars are available in sufficient quantities to prevent poisoning. A distance of two miles anywhere in this vicinity makes a marked difference in the results to be expected from bees.

#### Reproduction of Field Results by Feeding

It was found that a tent (24x30 feet) enclosing small buckeye trees (23 feet high) did not afford sufficient food to carry a large nucleus. Sugar syrup was of necessity fed to these confined bees with the result that very few bees were lost on account of dilution of the buckeye nectar. To parallel this condition certain nuclei, allowed free range in a heavy buckeye stand, were also fed sugar syrup with approximately the same results. Those not fed, under maximum buckeye pasturage, succumbed.

Buckeye poisoning was produced 15 miles from buckeye trees at the University Farm, Davis, in colonies fed buckeye products. Several colonies with considerable stored honey and pollen were killed outright in the buckeye location. It was from these sacrificed bees that materials for the feeding experiments were obtained. The feeding of bees was carried out in a number of ways under different conditions. Nuclei were confined in a cave or the laboratory



Four malformed bees from a buckeye banquet.

ing. At the same time (1925) the rainfall was short locally from San Francisco southward with the buckeye again getting in its deadly work in these places.

Even during bad years a variation in the effect was found in a short distance. Observation revealed that, wherever other plants were scarce and buckeye abundant, the bees suffered severely. In 1924 we were fortunate enough to have located bees (1) in heavy buckeye neighborhoods where other plants were scarce, (2) in places where other plants were present in goodly number and (3) where buckeye was scarce (all within 15 miles). The resulting effects were exactly in this order, running from total loss of bees where only buckeye was available; through severe poisoning with considerable buckeye; to practically none where an abundance of other plant nectars was gathered. These same locations were used again in 1925 under different floral conditions, caused by a heavy rainfall, with scarcely a trace of the trouble.



A grass feeding bug which migrates, as the grass dries, to the buckeye trees for food. Sap exudes from the feeding punctures in small droplets.

while being fed buckeye materials, others unconfined were fed under conditions of almost absolute dearth, some were allowed to gather the available nectar in fair locations, and still others were fed in locations (buckeye free) with plenty of incoming nectar. There feeding tests resulted in complete loss of bees in the first three instances, severe loss in the fourth and practically no effect in the last.

#### Bees Taking Buckeye Sap

The following fact should be recorded: A common species of bug Heteroptera (*Urbises solani*) Heid, was found puncturing and feeding upon the tender blossom buds and petioles in the Vacarille section. A droplet of sap was exuding from each puncture, which bees were observed to collect. This insect is normally a grass feeder, migrating to

the succulent buckeye trees when the grass has dried down with the opening of the dry season. This observation may introduce the question as to whether it is buckeye nectar, pollen or sap that is detrimental.

#### Recommendations

Unfortunately, no definite recommendation, outside of moving away or heavy feeding during the blossoming period (six to twelve weeks) can be made. It is still hoped that once the specific poisonous character is determined an antidote can be fed to counteract it. It apparently is not feasible, under ordinary circumstances, to cut out the buckeye, because a stump sprouts freely and soon grows up again. Also hundreds of acres would have to be cut and there are few beekeepers who could afford to pay for this labor even though they owned the land.

not be done with comb honey. Keep it in a very warm room. That is about the only way to prevent granulation.

2. When you have a swarm, you probably do not wait till all the bees are settled, or you stir them too much. A swarm hanging on a limb can be carried to a new hive almost without losing any bees at all. Of course, if they are queenless they will go back.

3. You can have your bees inspected by the State Inspector free of charge. The present inspector is A. L. Kildow, Putnam, Ill. Write to him. The money voted by the State is to be spent for the benefit of every beekeeper.

4. The best time to do the work is May and June, but the deputy inspectors may be too busy to attend to all the requests at the same time.

5. No, you should transfer your bees so they will be on straight combs, for the inspector is not supposed to transfer your bees for you.

6. Those colonies perhaps need new queens, if others have given a crop, in the same location. But the fact that bees do not make any surplus is not an evidence that they are worthless. The season may have been too poor for them to work in the supers.

## THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

#### DETERMINING FOULBROOD

I often see in the American Bee Journal the question, "How can I tell American Foulbrood?" and during my two years as State Apiarist in Missouri I was asked the same question many times.

I have wondered many times during the past 30 years if anyone else had ever tried one thing that I commenced doing in February, 1890, in Los Angeles County, California, and have done hundreds of times in my work as State Apiarist, and had many others try it.

In February, 1890, I found myself with 91 colonies, 44 of them with American foulbrood. I took Prof. A. J. Cook's directions for cleaning them up.

One day I noticed that bees would readily lick up the remains of European foulbrood off my toothpick. So I tried them with the American foulbrood. And to this time I have never seen one bee that would touch its tongue to this refuse, and always asked the owners (and others) throughout the state to try it, and none of them ever got one bee to touch it. So after many years' trial I have almost come to the conclusion that it is almost an infallible test. I wonder if anyone else has had similar experience. If so have they ever written about it?

If there is nothing in it I want to know it. All with whom I have talked have said they never heard of such a test.

#### MISSOURI.

Answer.—I believe that your experience is correct, although I have never tried offering American foulbrood to bees. But the experiments and tests of diseased larvae, by Dr. A. P. Sturtevant, reprinted from the "Journal of Agricultural Research" and entitled "The Development of American Foulbrood in Relation to Metabolism of its Causative Organism," show that the larvae of bees that die of American foulbrood contain practically no sugar, while those that die of European foulbrood, dying much earlier in their development, are still sweet with the sweet food they have received. This fact alone would indicate that bees would not be likely to feed upon the remains of American foulbrood, while we all

know that they readily suck up the juice of the larvae dead of European foulbrood.

However, I would deprecate making this trial in order to prove that a sample of disease is the American, because there are several tests which, when taken together, are almost positive proof. They are: Theropy condition of the dead brood after a few days; the odor of glue pot; the brown coffee color; the fact that dead larvae are all straightened out in the cell and most of them sealed over. With all these tests in the affirmative one may be sure that the disease is the American.

#### MISCELLANEOUS

1. What causes comb honey to become granulated? Is there anything that a person can do to bring comb honey back to its naturalness?

2. When hiving a swarm of bees, what causes part of the bees to go back to the old colony when placing them in the new hive? Perhaps half of them will sometimes go back. I had several swarms to do that this year.

3. What would it cost to have a state inspector to inspect my bees next spring for foulbrood? Does one who belongs to the State Beekeepers' Association get the work done free, or doesn't the association do it with the state appropriation?

4. When would the best time be to have this work done?

5. Can this be done on a colony where the foundation isn't built in straight?

6. Would you say where bees did not do anything in the supers last year and practically nothing this year, that they were queenless or needed a new queen? The hive body was filled with honey both years.

#### ILLINOIS.

Answers.—1. Honey granulates naturally, and some varieties granulate easier than others. The only thing we can do is to educate the consumers of honey to that fact. But our beekeepers seem to be ashamed when their honey granulates and try to prevent it. There is no way to do it except to heat it, and of course it can-

#### FABRE ON BEES—SMALL JARS FOR HONEY

1. Did you ever read a book written by Fabre on "Bees and Flies?" If so, is it of any value, and where could I get it? I am the party who ate lunch at table with you at Delphos, Ohio, at Ohio State bee meeting.

2. What is your opinion of putting as small as 5-oz. jars of honey on the market? I am president of our county organization and some are considering so small a jar.

#### OHIO.

Answers.—1. Fabre is a wonderful writer and he was a keen observer. I have all his works in the original French language, but there is no such title as you mention. Perhaps what you refer to is under a different title. However what he wrote about honeybees with his doubts about parthenogenesis in them, shows that he did not make a deep study of the honeybee. He doubts parthenogenesis especially because brought forward by a German. He was a wonderful observer, but he was like all of us, subject to taking things for granted, without sufficient study.

2. Five-ounce jars are good to get people to try honey. But we would have to have an immense amount of trade if we expected to dispose of much of the crop in five-ounce packages. We aim to get the people to try five-pound pails, as much as possible. If you think the matter over and read my recollections on putting up extracted honey (Nov., 1925) you will see that there are two sides to the question of honey packages.

#### ENTRANCE IN WINTER

I have a double-wall hive that became queenless. I removed what bees were in the hive and cut out the brood. It has lots of honey and pollen. Would you put in a swarm next summer, or would you use all foundation?

I have all double-walled hives; they have winter and summer entrances. I leave them out on summer stands under good roof cover. Should I close the winter entrance some, or leave it open full in this Pennsylvania climate?

#### PENNSYLVANIA.

Answers.—1. I would cut out all drone comb and any very old comb or crooked comb. Then I would preserve the balance in the hive, to put in a swarm next



year, unless the brood was diseased. It would be best to fill all the empty spaces with comb foundation. The hive should be kept where it will be cold, so as to freeze out all germs of moths. Then keep it in a closed room until the time to hive swarms.

2. As to the entrances, I do not know exactly what you mean by summer and winter entrances. I would leave a sufficient opening at the lower front for the bees to have sufficient ventilation and means of egress during winter warm days, for it is not advisable to keep them closed in. Shelter the hives as well as possible from wind. Corn fodder is a good shelter; so is a tight fence on the north of the hives. Let the sun shine on them.

#### DADANT EQUIPMENT

In the October issue this year, page 491 appears a very interesting article by J. H. Otto entitled "The Year in Manitoba."

Two things I note. He is using 12 frames in brood, Jumbo size, and wintering outside in all-season boxes. He mentions at the close, the Modified Dadant. Now I understand the Modified Dadant has 11 frames same size as Jumbo frames, but am I not correct in understanding that the Dadant apiaries use a larger brood box which holds 12 frames and spaced 1½ inches? Do they have supers to match in width? Are the big Dadant brood boxes so made that you can place one above the other for manipulation such as for strengthening a weak colony, etc.? Are these big brood boxes all-season-double walled, or do they adopt the "tunnel" system for wintering, such as described in the same issue by H. J. Link?

If I am not mistaken J. Tissot, Ottawa, Ontario, is using some form of Dadant hive. Is it the extra large or the Modified? I recollect some two years ago reading about a brief visit to Canada by Mr. Dadant and that he included Ottawa and Mr. Tissot in his journey. Later, I think, I read where Mr. Tissot made some reference to that call and expressed much satisfaction with his present equipment.

Owing to the wide range of climatic conditions, beekeepers seem largely to be working out their own salvation, hence the lack of standardization, but as I am working with the object of following the business in a commercial sense, I am disposed to secure every viewpoint as a result of the variety of experiences in different parts of the country and from that, plus my own experience, I will try to standardize before I get in too deep. So far I see that the men who can do so, without altering their present equipment too much, are adopting the large brood frame, which I believe is the Dadant and the Jumbo. These two frames are identical, are they not?

I believe in the matter of wintering, the open-minded beekeeper will admit that the double-walled all-season brood box containing the deep frames, Langstroth length, and with not less than 10 frames or more than 12 is the last word in permanent apiaries for production of honey to make money.

Now I want to clinch that last statement with your approval by saying that if a beekeeper can do so he should build his double-walled brood boxes large enough to take 12 frames spaced 1½ inches and then he will never have any regrets. It is an easy matter to reduce the number of frames in a large box, but impossible to increase the frames in a box of limited width, such as ten-frame width spaced 1½ in. I am thinking in this of my own outlook. A big double-walled brood box costs money and when building it there should be every provision for the future practice in outapiaries as well as the home one.

May I say that I consider the American Bee Journal indispensable to a commercial beekeeper. That opinion coming from me may not be worth much, but still I believe in giving the other fellow a good slap on the back when he is doing his fellow men the most possible to help them attain success.

ONTARIO.

Answer.—I believe the most satisfactory reply I can give your questions is to advise you to secure the "Dadant System of Beekeeping." It is that system that Mr.

Tissot follows and many others besides himself are pleased with it. We do not believe the 11-frame Modified-Dadant too small, with 11 frames. The Jumbo is the same as the Modified-Dadant, in fact it was patterned after our methods; but it has the space of 1½ only, instead of 1½ between frames from center to center. This narrower spacing is responsible for much of the swarming. It has only 10 frames.

Our supers match in width, but not in depth. We think the queens are more likely to stay below, when the super is shallow. In fact, we positively know that it makes a difference. We never use double stories. It is not necessary, the brood chamber being large enough for all their needs.

Many thanks for your praise of the A. B. J. We rarely print praise of our magazine and we believe that is one reason why people like it. They appreciate it without the other man's recommendation.

#### SOURCE OF LACQUER

1. The Journal is all right for the North or any cold country, but it does not apply very well to us. But it is amusing to see how little some bee men know about bees. We have made almost a complete failure this year and we are bound to lose heavily this winter, but the indications are better for next year.

2. Will you please tell me where I can buy gold lacquer suitable for use in canning, or is there more than one kind of golden lacquer? I can find it here, but am afraid to try it unless I know more about it.

ARIZONA.

Answers.—1. Our United States is such an immense country that we cannot expect to place ourselves at the standpoint of all, but the general information is good for all, even if the wintering problem differs and the flora is dissimilar. As to the question of how little some beekeepers know about bees we must realize that there is a great deal more that we do not know than there is that we know.

2. In regard to lacquer for canning, I suppose you mean lacquer to print honey pails and cans. We do not do this ourselves. It is done in the large establishments. The American Can Company at Chicago could probably give you some information. But I think you will not find it expedient to do any lacquer work yourself.

#### MOISTURE IN CELLAR

1. I have 40 swarms of bees that I am wintering in a cellar. There have been very few dead bees so far, but upon examining them the other day I noticed that on the cover of each hive inside there were quite a number of drops of water. What is the reason of this?

2. Why is it that it takes less honey to winter a swarm of bees in a cellar than outside?

ILLINOIS.

Answers.—1. A small amount of moisture may do no harm. Too much is apt to cause dysentery. Your cellar may be too damp. Give the cellar a little better ventilation. You may also help out by unsealing the covers of the hives and allowing the moisture to escape. Above all, keep your bees at an even temperature, and not too cold.

2. It takes more honey to keep a colony out of doors since there is a variation in the temperature. During very cold spells the bees must be active to keep warm, and to generate warmth they must use up honey. Also in a warm spell they are active and consume much honey. In the cellar they are at an even temperature and at a temperature where they consume the least honey.

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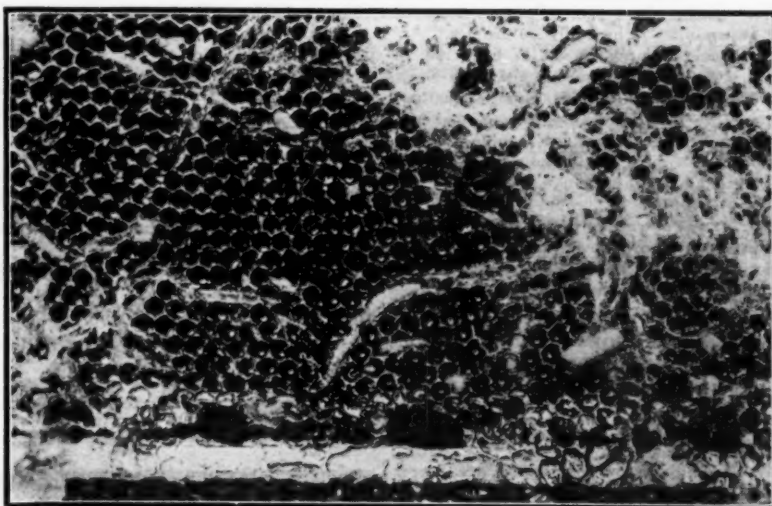
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## Meetings and Events

### Delegates to League Convention

As some states will soon be selecting delegates to the League Convention in Cincinnati in February, it is well to bear in mind that one voting delegate may be appointed for each twenty-five members or portion thereof. The League Secretary will be glad to indicate to state secretaries or to others interested, the number of delegates to which they are entitled. Address R. G. Richmond, State Agricultural College, Fort Collins, Colo.

This ruling, however, does not prevent any state from sending as many non-voting delegates as they wish and also allows as many private members to attend as may care to come. Delegates may represent state organizations by person or by proxy. Mention is made of this here so that the various organizations may take advantage of intervening meetings to appoint delegates. Exact dates of the meeting will be announced later.

### Golden Rule Sunday—December 6

December 6th is Golden Rule Sunday in Illinois. It is an important day, as it observes the needs of the growing children of the Near East. These little ones are destined to determine the future peace of Europe and to follow up the good work of the Locarno Conference.

During the last three years the Near East Relief Organization has gradually emerged from rescue relief to a reconstruction program for children. In its institutions it has nearly 40,000 boys and girls, left orphans when their parents were either massacred by the Turks or died from exposure or disease.

They are being trained in American ideals and in the trade and agricultural vocations so they will be self-supporting young men and women. They will form the backbone of the citizenry that is to remake this war-torn land.

### Illinois Annual Meeting

The annual meeting of the Illinois State Association will be held at the St. Nicholas Hotel, Springfield, Ill., on December 8 and 9. It is important that a large attendance be in evidence, as there is a thorough-going program and much need of all the support that the beekeepers of the state can give.

### Nebraska's Annual Meeting

This will be held at Lincoln, January 5th, at the College Farm, in connection with meetings of other

branches of Agriculture. All railroads offer reduced rates. The program includes men of national reputation and it will be well worth while to attend.

A meeting in the western part of the state is also being arranged for January 6th. The exact location and time will be announced later.

#### Cornell Short Course

The Annual Short Course in advanced beekeeping will be held at Cornell University during the week of January 25th, 1926. Work will begin at 9 a. m., January 25th and will continue until noon, January 30th. As soon as they are available, programs will be sent to anyone interested.

#### League Delegates from Louisiana

Mr. Jes Dalton, Bordelonville, and Dr. L. C. Spencer, New Orleans, at the Louisiana State Beekeepers' Association Convention, were elected as delegates to the American Honey Producers' League meeting in Cincinnati, with instructions to work for the recognition of health certificates for bees on combs and for the enactment of a federal law requiring the inspection of all bee products.

Committeemen were also appointed for local divisions of the state to help the association in local matters; to secure registration; to co-operate with beekeepers and inspectors, and report conditions.

It was brought out by the various speakers that Louisiana is free from foulbrood, except near Shreveport, in the northern part of the state, where foulbrood comes in from states to the north in shipments of bees on combs without health certificates, and at New Orleans, where it is shipped in with infected honey. During the unloading of the honey, the ships, the docks and the unloading apparatus are dripping wet with honey from damaged containers. The bees literally swarm over the ships and carry the infected honey back to their hives. Every year the inspectors find colonies in this vicinity infected with foulbrood, and **each and every one of them is burned, bees, honey, comb, and hives, without moving them from their stands.** The following year the same thing occurs merely because foulbrood honey is shipped into New Orleans.

It was also shown that since Louisiana has had a system of inspection, no cases of foulbrood have been shipped out of the state with bees on combs accompanied by a health certificate. It seems to us here in Louisiana that such a record should receive some consideration from the northern states and buyers of bees.

At the suggestion of Dr. L. C. Spencer, the association decided to ask the Department of Zoology, at Tulane University, and Louisiana State University to make a survey of the honey-bearing plants of the state. This work should be of value to the beekeeper in that it will enable him to predict, with some accuracy, the occurrence of the honey flows during the year.

H. A. Stabe,  
Secretary-Treasurer.

#### A. A. A. S. Program

Section of Apiculture, at Kansas City, December 28-31, at the meeting of the American Association for the Advancement of Science.

Address of the Chairman, "Research in Apiculture"—R. L. Webster, Fargo, North Dakota.

Reading of Papers and Discussions.

1. Investigation Directed to the Honey Market (10 min.)—E. W. Atkins, Watertown, Wisconsin.
2. The California Buckeye and Its Relation to the Hive Bee (5 min.)—G. H. Vansell, Davis, California.
3. The Utilization of Pollen and Pollen Substitutes by the Honey Bees (10 min.)—Ralph L. Parker, Manhattan, Kansas.
4. Chronological Distribution of Bee Moth (10 min.)—F. B. Padlock, Ames, Iowa.
5. *Braula coeca* (10 min.)—Virgil Argo, Ithaca, New York.
6. Literature on Diseases of Adult Bees (15 min.)—C. P. Dadant, Hamilton, Ill.
7. The Use of a Water-Soap-Formalin Solution for Disinfecting American Foulbrood Combs (10 min.)—G. H. Vansell, Davis, Cal.
8. The Cornell Beekeeping Library (10 min.)—E. F. Phillips, Ithaca, New York.
9. Field Notes on Honeybees Gathering Nectar from Long-Tubed Flowers Through Side Punctures Made by Other Insects (15 min.)—A. C. Burrill, Agricultural College, North Dakota.
10. Symposium — Spraying and Dusting of Fruit Trees and Their Effects Upon the Honeybee (15 min.)—Led by Frank Pellett, Hamilton, Illinois.
11. Outline of Program for 1926 Meeting—Open discussion. Report of Committees. Selection of Officers. Adjournment.  
R. L. Webster, Chairman.  
G. M. Bentley, Secretary.

#### Illinois Convention Program.

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for the Illinois Convention, mentioned on page 580. The dates are December 8-9, at the St. Nicholas Hotel, Springfield. The speakers include the following men: J. I. Hambleton, Bee Culture Laboratory, Washington, D. C., "A National Program for Beekeepers"; V. G. Milum, University of Illinois; E. R. Root, editor "Gleanings in Bee Culture"; C. P. Dadant, editor "American Bee Journal"; A. L. Kildow, State Inspector of Apiaries; and G. H. Cale, of Dadant & Sons.

#### New York State Meetings

December 1-2, Western New York, at Buffalo. A novel and history-making organization project will be launched at this meeting.

December 8-9-10. Federation and Marketing Association in joint meeting at the Joseph Slocum College of Agriculture, Syracuse University. The President's gavel will be awarded at this meeting to the local association affiliated with the Federation showing the greatest increase in membership during the past year.

#### Radio Course in Beekeeping

There is the best of opportunity to take a good, practical course in beekeeping right over your radio. During December and January such a course is being conducted by Station WCCO, Minneapolis. Enrollment cards giving all details will be sent to applicants on request. Address Extension Division, University Farm, St. Paul Minn.

#### Kindig Resigns

We regret to learn that B. F. Kindig is resigning as Inspector of Apiaries in Michigan. He adds one more to the list of those who find in public service somewhat of a thankless job. He has been one of our most efficient Inspectors and Michigan will find it hard to select a man to carry on his work with equal vigor.

#### Ontario Convention

The Ontario Beekeepers' Association annual convention will be held in the Prince George hotel, Toronto, December 1, 2 and 3. Dr. A. P. Sturtevant, of Washington, and R. H. Willson, of New York state, will be the two outside speakers.

#### George Hummer and Wife Killed in Accident.

Mr. Glenn Hummer, of Prairie Point, Mississippi, has asked me to notify you of the death of Mr. and Mrs. George Hummer in the railroad accident at Victoria, Mississippi, on October 26. George Hummer was a

son of George A. Hummer, of Prairie Point, and a member of the well known firm of beekeepers, George A. Hummer & Sons.

Mr. Glenn Hummer's two young

daughters were also in the wreck, but despite the fact that they were seriously injured, are reported now to be out of danger.

R. B. Willson.

## Ventilation Pro and Con

By Carl L. Wilson.

**I** TAKE exception to some of the statements of Mr. Egan as to the ventilating principles involved. I do not believe that the space over the tops of the frames, or the larger space, if an extra body is used, has any great deleterious influence on a hive of bees. The wide-spread success of the story-and-a-half, and two-story hives, tends to bear out the above statements.

However, do not think that I am against a large brood chamber all in one body. I am firmly convinced of the advisability of changing to Modified Dadant hives for the sake of the larger honey reserve, the larger frame for brood, and the reducing of the labor costs. I prefer the 6-inch super also.

First let us see how bees manufacture heat. Honey is one of a group of heat-forming foods or energy givers. The bee eats the honey, which is absorbed into the bee's blood, and carried to different parts of the body. Wherever needed to replace tissue, it is combined with the oxygen that the bee breathed in with the air. This combining of absorbed food with the oxygen, absorbed from the air in the lungs, is what produces heat, in bees, animals, and men.

The greater the muscular movement of the bee, the faster its blood circulates, and the faster the rate of respiration; consequently, the more honey is burned in the body of the bee. This produces more heat. Now if you lessen the amount of honey held in the bodies of the bees of the cluster, you lessen the amount of heat that can be produced. We all realize that, but how many realize that if you lessen the amount of pure air you also lessen the amount of heat that can be produced?

The ventilation of the hive depends on the difference in weight of equal volumes of air, in the hive, and in the outside. In winter the cluster produces heat, causing the air to move first up to the hive top, then to an outlet, whether that outlet is the entrance or a top cushion of packing. The cold air comes in at the bottom of the entrance.

The air must circulate in the hive, for air once breathed by a bee and exhaled, would be fatal if breathed again a few times.

When cold air enters the hive, it sinks to the bottom by reason of its greater weight, then comes up under the cluster of bees, is breathed by them, and is sent warm to the roof. If upward absorbents are used, the warm, foul air escapes through the packing, carrying the moisture with it. If the only outlet is at the entrance, the air simply goes to the

top, then either over the top bars down between another set of frames and out, or it goes to the top and then moves over to the hive ends and down between the same two frames and out. To my notion in this case, the ventilation is insufficient for a strong hive if the entrance is as small as three-eighths by three inches. If upward absorbents are used it is about right.

The proper place to regulate the amount of ventilation is at the entrance. Years ago, I used a three-eighths entrance with the wooden cover sealed tight. Every spring I would have several dead colonies, some with ice in, and several hives would have mouldy combs, even though they came out alive. One winter I packed the majority of my bees with just an entrance of one-half by three-eighths inches. The winter cover was solid wood sealed tight. The packing was four inches on the bottom, eight inches on the side, and seventeen inches on the top. I lost 35 per cent that winter. The winter was not extremely severe. Now I use an entrance three-eighths by three inches, and use a cloth over the bee escape hole in the inner cover. When packed in this manner I lose hardly any colonies that are even of medium strength. Also I have absolutely no mouldy combs in the spring.

Now let us take up the question of where the heat goes. In packed hives with sealed down covers, I think the main loss is at the entrance. The loss through the packing is small. A thermometer, placed in the entrance of such a colony will show a reading of 30 to 40 degrees even in zero weather. This, to my mind, proves first that the heat is going out at the entrance, and second, that the bees are in a blanket of foul air. Better an inlet for fresh air at the bottom, and an outlet for foul air at the top.

Did you ever climb to the ceiling of a hall where a convention or a large number of people were present, in the winter? If so you will understand the reason for upward ventilation. The air is almost unendurable. Where would you let out the foul air in such a building? At the top window, of course, and you would let the fresh air in at the bottom.

In Mr. Dadant's reply to Mr. Egan, he states: "that the ends of the combs are not closed in movable-frame hives as the bees intend to have them." Now how does this work out in the average box hive?

A box hive beekeeper robs his hives after the honey crop is over, generally by the light of the silvery moon. He takes off the cover and

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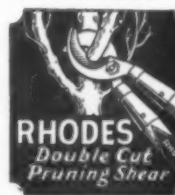
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10 lb. pails, per carton of 50	5.00

Write for prices on lithographed pails

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5 lb. pails, per case of 12	\$1.10
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60 lb. cans, 1 per case	.90
60 lb. cans, 2 per case	1.25

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8 oz. honey capacity, Tall or Fluted, per case of 24	\$1.05
16 oz. honey capacity, Tall or Fluted, per case of 24	1.35
32 oz. honey capacity, per case of 12	.95

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smokes down the bees. Then with a right-angled knife he cuts out the honey down to the cross sticks. By this process he leaves a cavity probably as large as one's head at the very top of the hive. Now is this a sealed tight hive? In this shape thousands of box hives pass the winter.

By the way, you will notice that, when the bees do build down from the ceiling they leave plenty of pop holes, for communication with adjacent combs.

I think that the size of entrances and the shape of entrance blocks, should have a great deal more study than they have had, judging from the ones the factories send out. Also the right amount of pressure on the packing, when pressed into the space between the walls and on top. Some pressure is best! With an electric furnace, it is twelve pounds per square inch. What is it in a hive?

Now as to division boards: The best I think is just an old black comb filled solid with sealed honey.

I have wintered three-frame nuclei with just such a comb on each side, in a ten-frame hive, the rest of the space vacant, coming out in the spring with three frames of brood.

Please look up: "Fifty Years Among the Bees," by Dr. C. C. Miller, page 102: "In former years I made some attempt to keep the bees warmer by the use of a division board, closing down to the number of combs actually needed at the time by the bees. I was disappointed to find no clear proof that any great good came from it. Since then the experiments of Gaston Bonnier have shown that combs serve as good a purpose as a division board, so that the trouble of moving a division board from time to time to accommodate the size of the colony is avoided."

Now as to my statements on ventilation, look up in the same book, page 42: "No matter what is the ventilation of the hives, it can do little good so long as there is no pure air in the cellar." No matter how much the air circulates inside the hive, it can only get out at the entrance.

Also the same book, page 17: "That gave ample ventilation, for when the hives were reversed the entire upper surface was open, all being closed below." In other words, Dr. Miller was a believer in, and a student of, ventilation.

Now look up "Langstroth on the Honey Bee," page 346. You use almost an entire page showing the value of winter passages, and now you agree to Mr. Egan's statement that the top bar should be sealed to the cover for best results.

In the same book, page 352: "In the coldest parts of our country, if upward absorbents are neglected, no amount of protection that can be given to hives, in the open air, will prevent them from becoming damp and mouldy, even if frost is excluded, unless a large amount of lower ventilation is given." In other words, if you do not have upward ventilation, you must make your en-



trance larger, thereby giving more room for a piercing wind to enter. Page 360: "If the colonies are strong in numbers and stores, have upward moisture absorbents, easy communication from comb to comb, good ripe honey, shelter from piercing winds, and can have a cleansing flight once a month, they have all the conditions essential to wintering successfully in the open air."

Look up in "A B C and X Y Z of Bee Culture," page 627: "Starvation is often due to the fact that cold weather has continued so long without a let up that the bees are left high and dry, so to speak, in the center of the winter nest. They actually starve, notwithstanding that sealed honey is within two inches of the cluster. We have seen this condition almost every winter in our yard." I wonder if their loss was due to sealed down covers, no easy communication from comb to comb? Also not deep enough frame for stores.

Note: Morley Pettit in the American Bee Journal, May, 1925: "It is quite possible to have good, strong colonies too warmly packed, as I have found to my sorrow." I wonder if he really means just that? Would a little more ventilation have helped him with his problem, especially upward ventilation?

Why not get the American Honey Producers' League to work out an insurance plan for wintered bees? Don't you think an insurance company would work out the proper plan to winter bees for each locality that they insure? Don't you think it would lower winter losses through education? Don't you think it would stabilize the business, give accurate statistics and make better beekeepers? Indiana.

(If our correspondent will read over the editorial comments on page 391, he will see that we want the top of the brood chamber closed with a cushion. This lets out the moisture, and the foul air, cooled, escapes downward, at the end of the combs. But a division board, closed at the ends, prevents too great a circulation of air through the hive. Our greatest success, in wintering, has been secured in this manner.—Editor.)

#### How College Boosts the Industry

A consistent booster for honey and beekeeping is the Iowa State College of Agriculture and Mechanic Arts at Ames, Iowa. It issues a publication, "Better Iowa," from which newspapers all over the state may clip timely news. Lots of material about beekeeping and honey is broadcast in this manner. Worthy of note are the two or three line items which come in handy for editors to fill up gaps in the paper, such as these:

"Orchards and bees go well together. Blossoms feed the bees and bees pollinate the blossoms."

"Honey is a cash crop. It means money returned to the farm. It is a step towards diversification, making farms self-supporting."

SEASON 1926

## Pacific Citrus Honey Company

Office 221 Chancery Building, 564 Market St., San Francisco, Calif.

Apiary at Woodlake, Tulare County, Calif.

Prices for March and April 1926

### QUEENS—Three-banded Italians

1 mated, untested, \$1.00; 6 for \$5.50; 7 to 15, 80c each; 16 to 50, 75c each. Over 50, 70c.

### PACKAGE BEES

In two-pound packages only.

1 to 10, \$2.50; with queens introduced at \$3.50  
10 to 100, \$2.00; with queens introduced at \$2.75

Package bees are shipped in extra large two-pound cages. Large orders will be given a lower quotation. Orders for March and April delivery accepted and filed NOW.

Terms: 10 per cent with order, balance before shipment.

### IT'S EASY TO BUILD THINGS

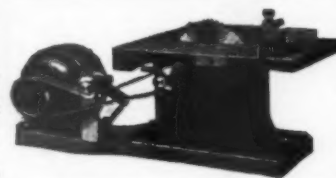
When your ripping, cross-cutting, mitering, grooving, rabbeting, sanding, grinding and many other operations are done on a

### Boice-Crane Handisaw

All metal construction. Accurate. Made in three sizes to meet every requirement. Saws 2½ inch stock. Dadoes ½x¾ inch. Cuts ¾ inch moulding. Driven by any ¼ to ½ h. p. motor attached to light socket. Portable. Put on any bench. Priced surprisingly low.

Write for descriptive circular on Boice-Crane Handisaws, Bench Band Saws, Jointers, Lathes and the Boice E-Z Pay Plan.

W. & J. BOICE. Dept. J12A. TOLEDO, OHIO



## 1926 — Three-Band Italian Bees — 1926

Package bees, nuclei and queens. None better; reasonable prices. Combless packages equipped with special feeders, which insures LIVE delivery as near 100 per cent as possible. Total loss the past season was less than one-half of one per cent. No disease. A square deal, safe arrival and satisfaction guaranteed. Have satisfied customers near you. Write for prices.

### YORK BEE COMPANY

H. F. YORK, Box 309, Jesup, Georgia.

## Beekeepers Take Notice

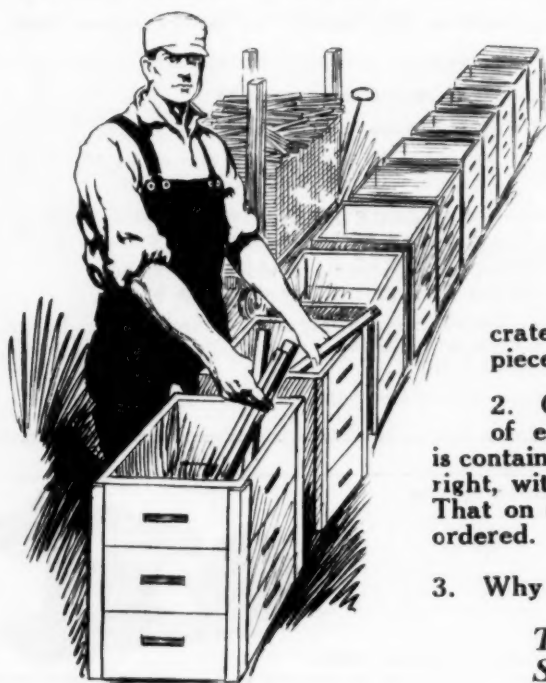
For thirty years we have specialized in the manufacture of Sections from the whitest selected Wisconsin basswood

We also manufacture hives, supers, frames and shipping cases

Write for our free illustrated catalog

## Marshfield Manufacturing Company

Marshfield, Wisconsin



## Accuracy

### The Watch-word of Our Packing Department

1. In packing a car-load of Beehives, over 64,000 separate pieces must be carefully counted and placed in the proper place. One crate of five metal covered hives contains 385 separate pieces.

2. Check-check-check to be certain that every piece of equipment is Root Quality. That the right count is contained in every package. That packages are labeled right, with customers name and the most desirable routing. That on orders, users of Root goods get exactly what they ordered.

3. Why all this careful checking?

*To Insure to You the Absolute Satisfaction Which We Guarantee*



**The A. I. Root Company of Iowa**  
COUNCIL BLUFFS, IOWA



## SUPERIOR ITALIAN BEES

We want you to read our twenty-page illustrated circular on package bees, written to bring about a better understanding between the buyers and sellers of bees and queens.

Just send us your and your neighbor's names. We hope it will be worth that much to you.

### CYPRESS BEE SUPPLIES

Let us show you how much we can save you on your Hive Bodies, Supers, Frames, Foundation or anything you might want.

Ten-frame bodies, in lots of 50 ..... 60c each Ten-frame bodies, in lots of 50, with frames 1.00 each

White pine Hoffman frames, per 1,000 ..... \$45.00

**THE STOVER APIARIES, Tibbee Station, Mississippi**  
Telegraph Station and Shipping Point, Mayhew, Miss.

**For years we have been shipping thousands of pounds of bees all over the U. S. A. and Canada**

Booking orders now for spring shipping.

**Write for free circulars** telling about a customer harvesting 45,000 pounds of honey from 100 packages of bees this past season. Just think 430 pounds average.

**AULT BEE COMPANY <sup>BOX 98</sup> WESLACO, TEXAS**

### Agriculture Outlook Remains Good

The 1925 agricultural picture is painted in bright colors. As business conditions also continue good the combination presents an optimistic national outlook. The Department of Agriculture's general index of purchasing power of farm products in terms of non-agricultural commodities remains at a level of 90 compared with a five-year pre-war level taken as 100.—(Official Record—U. S. D. A.)

# Crop and Market Report

Compiled by M. G. Dadant.

For our December report, we asked reporters to answer the following questions:

1. What proportion of the 1925 crop is sold in your locality?
2. How is honey selling?
3. Any comb honey left, and at what price is it selling?
4. How is the honey market generally? Is the activity of beekeepers in promoting local sales of any great benefit?

## PROPORTION OF CROP SOLD

There are a few localities reporting most of the 1925 crop on hand, but it is not the general condition throughout the country. Our estimate would be that at least 60 per cent, and possibly 75 per cent, of all the honey in the United States has left the producer's hands.

In practically the entire Southeast, the honey crop is almost all disposed of, and in Texas we may say that the entire crop this year is gone and that increasing quantities are being imported to supply the demand. In fact, we have the report from one of the large beekeepers there that he is now selling on his fourth carload of imported honey to supply his regular trade. Would that we only had hundreds of other beekeepers like him who would immediately get in touch with outside markets as soon as their own crop was disposed of and keep their trade supplied throughout the entire year. This, no doubt, would relieve the honey situation even in the years of biggest production.

## HOW IS HONEY SELLING?

We will say that there is not a remarkable demand for honey this year. In fact, there are many who report an apathetic attitude toward the honey demand. However, on the whole, the demand is almost up to last year and in many places it exceeds it considerably. This is a very good sign, especially as there is ample honey to supply the need for a considerable period yet, if beekeepers and sellers of honey will only keep themselves supplied by going outside to other markets.

The demand for honey is especially good in the entire South as well as in eastern sections, being of slow sale in the Central West and plains states, especially. This is probably due to the fact that there is generally a large crop in these sections and that the demand is being curtailed by cut prices on the part of beekeepers. Rather than make an extra demand for honey, the cut really decreases the demand by placing a question mark in the minds of customers for honey, owing to the extreme variation in the prices.

## COMB HONEY

There is going to be no difficulty this year, we believe, in disposing of the entire crop of comb honey, but the prices at which comb honey is being offered is really not remunerative, considering the extra labor in producing the crop and getting it ready for market.

The very great range also in price of comb honey in different sections would indicate that this market is even in worse condition than the extracted honey market.

In the Central West comb honey is being offered all the way from \$3.50 per case to \$6.50, depending upon the man who is offering it and also depending upon the quality of the honey, the grading that has been done, etc.

In the West, the price in carload lots is stabilizing around \$4.00 per case for No. 1, although we have one or two reports of carloads which are ready to move at a price of \$3.50 to \$3.75, if offered. Undoubtedly the comb honey market needs some working on to get a remunerative price for the producer.

The big change from comb to extracted honey production has rather demoralized the market, which has not been able to stabilize itself since war times.

## BEEKEEPERS' ACTIVITIES

On the whole the word coming in from our reporters this month would indicate that the activity on the part of the beekeeper in selling honey locally is having a great deal of effect on the amount of honey sold.

There are, however, some "flies in the ointment."

One of these is that the local efforts are not confined to a fair price for honey, and this results in a cut rate here and there and everywhere, and instability is a consequence.

There does not seem to be any question but that this activity in selling honey locally where probably it has not been sold before creating a demand which draws just that much honey from the big markets and allows the big producers of the West to ship carloads into the larger markets without experiencing any difficulty from competition of smaller lots.

However, when such a local market is not handled on a price basis which can compete with outside honey, as soon as the local producer has disposed of his crop he is through, because he cannot continue to supply the trade at anything like the same price, and the result is a big falling off in demand.

There is no doubt but that many stores are handling honey in the last two years that have not previously handled it, just simply because the beekeepers have been buying small glass packages and tin packages and catering to the trade of the local retail stores.

## GENERAL CONCLUSION

During the past month there has developed possibly a slight feeling that honey is not selling as well as it should, and also, possibly, that there would have to be a slight reduction in price in order to move the crop. Speaking, of course, of the jobbing prices, as the retail prices are fairly well established. However, we do not see that there are any grounds for this unless producers are asking an extra high price for their product.

We do not see any reason why honey should not bring at least 10 cents per pound f. o. b. point of delivery. This means that figuring Chicago, New York and other large cities as point of delivery, honey should rule at least at a price of 8½ to 9 cents per pound f. o. b., inter-mountain territory, in carload lots.

Our idea is that the price should bring nearer to 9 cents per pound than otherwise. In fact, there has been a number of carloads bought at 9, 9½ and 10 cents per pound, but also several cars selling at 8¼, 8½ and 8¾ cents per pound. We do not see that the honey market is drifting to the point where these prices would have to be revised to dispose of the crop, however, nor do we see where there is going to be any shortage of honey which would indicate any advance in price, making it advisable for producers to hold their honey for "a long price."

One point emphasized by reporters is that in many localities the beekeepers are not taking any particular cognizance of honey market conditions and are really giving no effort to honey selling.

This was commented upon by a bee supply firm one or two years ago, who sent questionnaires to a large number of beekeepers and from them deduced that very few were interested in markets and market quotations, comparatively. This is not as it should be, and would indicate that great numbers of the smaller beekeepers figure anything they get from their bees as additional to their income and do not charge against them any depreciation of investment, interest on money or even any of their labor spent on the bees.

This is a condition which does not exist in many other pursuits. The man raising one or two hogs or a few pounds of butter, expects to get the market price, regardless, and does not feel justified in taking any less, even though it takes only a small portion of his time to care for such cattle or hogs as bring this additional income.

It is unfortunate that all sections of the country cannot imitate the example of the State of Texas. They have a definite marketing system there and when the Association sets a standard for prices, it is pretty well followed by practically all of the independent beekeepers of the state.

If this were a general rule throughout the country, we would find that honey prices would soon become stabilized and as a result these demands would increase rather than decrease.



## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

## BEES AND QUEENS

**GOLDEN ITALIAN QUEENS** and nuclei for 1926. Price, untested, \$1.00 each; 6, \$5.00; 12, \$10.00; \$75.00 per hundred. Two-frame nuclei with queen, \$4.50 each. Safe arrival guaranteed.

E. F. Day, Honorville, Ala.

**COMBLESS PACKAGE BEES** shipped on sugar syrup. Pure Italian stock with queen. Two-pound packages, 1 to 10, \$4.25; 3-lb. package, 1 to 10, \$5.25. Write for prices on larger lots and nuclei. No disease, and safe arrival guaranteed; 20 per cent books orders. Reference furnished.

John A. Williams, Box 178, Oakdale, La.

**SUPERIOR ITALIAN QUEENS AND BEES** Get our prices on package bees for 1926 delivery. No disease; we guarantee bees and service to please in every detail or your money back.

W. C. Smith & Co., Calhoun, Ala.

**SALIDA APIARIES** for early Italian queens and package bees. Write for prices and order early.

Salida, Stanislaus Co., Calif.

**FOR YEARS** we have been shipping thousands of pounds of bees all over the U. S. A. and Canada. Booking orders now for spring shipping. Write for free circulars telling about a customer harvesting 45,000 pounds of honey from 100 packages of bees this past season. Just think—430 lbs. average.

Ault Bee Company, Box 98, Weslaco, Texas.

**JAY SMITH** strain Italian queens. Book early for spring delivery. Satisfaction guaranteed; \$1.00 each.

J. C. Hester, Mansfield, La.

**CAUCASIANS**—Queens and package bees for early spring delivery.

Bolling Bee Co., R. 1, Bolling, Ala.

**BOOKING ORDERS** for high-grade three-banded Italian bees and queens. 2-lb. package with select untested queen, \$4.50; discount on quantity. Select untested, \$1.00, \$10.00 per dozen; select tested queen, \$1.50. Inspector's certificate with each.

J. Allen, Catherine, Ala.

**1926 PACKAGE BEES**—Pure Italians. Write for prices.

J. J. Scott, Crowville, La.

**I AM** booking orders for May delivery on Caucasian and Italian 3-frame nuclei; also queens of either race. Yard inspected; no disease.

Peter Schaffhauser, Havelock, N. Car.

**TEN YEARS** of experience in breeding queens of quality: Golden, also gray Caucasians. Golden queens: one, \$1.25; dozen, \$11.50. Gray Caucasians, one, \$1.50; dozen, \$15.00. Pure mating. Safe arrival guaranteed in United States and Canada.

Tillery Bros., Rt. 5, Greenville, Ala.

**SHE-SUITS-ME QUEENS**—Untested three-banders, \$1.00 each; 25 or more ordered in advance, 75c each. Safe in cage with initial order.

Allen Latham, Norwichtown, Conn.

**SALIDA APIARIES** are now booking orders for early spring delivery of our high-class Italian queens and bees. We use the best breeders obtainable and ship only the best thrifty queens. Prompt service, safe arrival in U. S. and Canada, and we guarantee to treat you square. Untested queens: 1, \$1.25; 6, \$7.00; 12, \$13.00; 25, \$1.00 each, and 100 at 90c each.

Salida Apiaries, T. L. Nicolaysen, Prop., Salida, Stanislaus Co., Calif.

**GOLDEN THREE-BANDED** and Carniolan queens. Tested, \$1.00; untested, 75c each. Bees in 1-pound package, \$1.50; 2 pounds, \$2.50; 3 pounds, \$3.25. Safe delivery guaranteed. C. B. Bankston, Box 65, Buffalo, Leon Co., Texas.

**FOR SALE**—Italian queens ready May 15. One queen, \$1.00; 6 queens, \$5.50; 12 queens, \$10.00.

W. W. Talley, R. 4, Greenville, Ala.

**HARDY ITALIAN QUEENS**—\$1.00 each. W. G. Lauver, Middletown, Pa.

**BRIGHT ITALIAN QUEENS**—One, \$1.00; 6 for \$5.00 or 12 for \$10.00. Write for prices on large orders or package bees.

P. B. Skinner, Greenville, Ala.

**LEATHER COLORED ITALIAN QUEENS**—\$2.00; after June 1st, \$1.00. Tested, \$2.00.

A. W. Yates, 15 Chapman St., Hartford, Conn.

## FOR SALE

**FOR SALE**—At once, my entire queen-rearing outfit, including 100 eight and ten-frame hives bees with one and two supers of honey; also a nice bunch of baby nuclei and one of the best ranges in the south. My reason for selling is eye trouble.

R. O. Cox, Rutledge, Ala.

**FOR SALE**—Sixty colonies Italian bees. Extracting bodies, extra hives. Comb honey supers for 4x5 sections, excluders and other supplies. No disease. Everything eight-frame.

Geo. H. Frey, Gen. Del., Cedar Rapids, Ia.

**FOR SALE**—In one of the garden spots of the world; no frost, always green, 400 colonies of bees in three locations. Seven-room frame house, out buildings. Stock valued at \$2,000. Will sell part or all of above at sacrifice. Sickness cause of sale.

Penn G. Snyder, Aibonito, Porto Rico.

**EXTRACTING OUTFIT**—Root 4-frame power extractor, 1½ H. P. engine, Peterson capping melter, wax separator, steam knife, boiler, dynamo. All like new.

A. G. Van Ronzelen, Route 2, Box 95, San Antonio, Texas.

**WILL SELL** 50 to 150 colonies of bees, all standard equipment.

Chester E. Keister, Orangeville, Ill.

## HONEY AND BEESWAX

**FOR SALE**—Comb honey; also choice light amber extracted.

Mathilde Candler, Cassville, Wis

**EXTRACTED BUCKWHEAT HONEY** in 60-lb. cans, 10c per pound.

Walter Severson, Altamont, N. Y.

**EXTRACTED HONEY**—White clover and sweet clover. Blended amber color in 60-lb. cans. Write for prices. Sample 10c.

J. W. Bittenbender, Knoxville, Ia.

**DELICIOUS** Nevada alfalfa honey.

C. E. Andrews, Fallon, Nevada.

**SAGE HONEY**—About 100 cases white; 100 cases fancy white. Also 70 cases extra light amber (sage mixture) and 100 cases light amber honey.

Fred A. Parker, Lompoc, Calif.

**FOR SALE**—Extracted honey, superior quality and heavy consistency.

Louis Kasch, Pocatonia, Ill.

**FINE CLOVER HONEY**—in any quantity. Also dark.

Roland Brandt, Postville, Ia.

**WANTED**—Good clover honey in lots of a ton or less. Send sample and lowest possible price.

Joe Kreminski, R. No. 1, Box 350, Duluth, Minn.

**FOR SALE**—Choice fancy 1925 crop white clover extracted honey in new 60-lb. cans 11½c; amber, 11c. Sample, 10c. Also some comb honey. Write for large lot prices.

Edw. A. Winkler, Joliet, Ill.

**FOR SALE**—New crop clover honey in 60-lb. cans.

Frank Janeschek, Middleville, Mich.

**FOR SALE**—Honey in new 60-lb. cans, cased single. Mostly clover, mixed slightly with basswood. Prices on request.

John Olson, Davis, Ill.

**CLOVER HONEY**, thoroughly ripened; is thick, rich and delicious; fine for table use, 3-lb. can, \$1.00; 5-lb. can, \$1.35; 12-lb. can, \$3.00, postpaid. Six 5-lb. pails, \$5.00, not prepaid. No. 1 clover comb honey, \$5.50 per case of 24 sections; No. 2, \$4.50 per case, f. o. b. shipping point. Delicious white clover chunk comb honey, 5-lb. pail, \$1.45, postpaid.

F. L. Barber, Lowville, N. Y.

**NEW CROP** white clover honey in 60-lb. cans. Prices on request.

Sundberg Bros., Route 3, Fergus Falls, Minn.

**FOR SALE**—Choice clover honey. Comb and extracted. Also a few cases No. 1 buckwheat comb honey. Write for prices. State quantity wanted.

Mike Larson, Box 144, Gardner, Ill.

**FOR SALE**—Choice extracted honey, two 60-lbs. in case; light amber, \$13.00 per case; buckwheat, \$12.00 per case.

J. G. Burtis, Marietta, N. Y.

**RASPBERRY HONEY**—Water white, heavy body, new 60-lb. cans, 15c per pound.

Irwin R. Van Devier, Medina, Ohio.

**COMB AND EXTRACTED HONEY**—No. 1 white comb honey, \$5.00 per case.

H. J. Walters, Burgoon, Ohio.

**WANTED**—Basswood honey, in half-ton shipments, send sample and state price.

J. K. Wolosevich, 913 W. Cullerton St., Chicago, Ill.

**SEVERAL TONS** of light amber and white clover honey of finest quality; state quantity wanted and I will quote you a fair price.

Lee Horning, R. 4, Morrison, Ill.

**STRICTLY** white northern extracted honey in new 60-lb. cans, carload or case lots.

Geo. Seastream, R. 1, Moorhead, Minn.

**FOR SALE**—No. 1 white comb honey, \$5.00 per case of 24 sections; No. 2, \$4.00 per case; dark comb \$1.00 less; dark extracted 9c lb.

H. G. Quirin, Bellevue, Ohio.

**FOR SALE**—White honey in 60-lb. cans; also Porto Rican in 50-gal. barrels. Sample and prices on request.

A. I. Root Co., 121 Central Ave., Leonia, N. J.

**FOR SALE**—Our fine quality 1925 crop white and sweet clover honey put up in 60-lb. cans, two to a case. Write for prices. Sample 20c.

Martin Carmoe, Ruthven, Iowa.

**FOR SALE**—A quantity of extracted white clover and sweet clover honey of highest quality. Write for prices, stating quantity desired and how put up. Sample 10c.

Emile J. Baxter, Nauvoo, Ill.

**FOR SALE**—New crop honey, finest quality, put up in 60-lb. cans, also 5-lb. pails. Prices on request.

W. M. Peacock, Mapleton, Iowa.

**FOR SALE**—Honey in 60-lb. cans; sweet clover, basswood, white clover and other flavors. Tell us what you want. Beekeepers who need more honey for their trade, and solicitors should write us.

A. I. Root Co., 230 W. Huron St., Chicago, Ill.

**FOR SALE**—1,000 cases white clover honey, 8,000 lbs. in 60-lb. cans, white clover honey. W. L. Ritter, Genoa Ill.

**CLOVER AND BASSWOOD HONEY** blended by the bees. Color white, body fine. Prices upon request. State amount wanted. W. A. Jenkins, Rock Port, Mo.

**FOR SALE**—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request. Dadant & Sons, Hamilton, Ill.

**WANTED**—Car or less lots of extracted clover honey. Mail sample and quote lowest cash price. Also get cut price circular on cans and pails for your 1925 honey crop. A. W. Smith, Birmingham, Mich.

**OUR HONEY BULLETIN** sent on request. Quotes you advantageous prices on large and small lots. Shipment from our stock here direct from the producer. White clover honey of heavy body, packed in 60's. Also some autumn. Send us a card today. A. I. Root Co., Council Bluffs, Iowa.

**CLOVER HONEY** for sale in 60-lb. tins. Sample 16c. Edward Hassinger, Jr., Greenville, Wis.

**BEEWAX WANTED**—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station as you may desire. Dadant & Sons, Hamilton, Ill.

**HONEY FOR SALE** in 60-lb. tins. Clover, crystallized at 13c per pound; clover liquid at 14c per pound. Hoffman & Hauck, Inc., Ozone Park, N. Y.

**FOR SALE**—White and water white sweet clover honey; put up in 5-gallon cans. Strictly first-class in every way. Write for prices, stating quantity wanted. Dadant & Sons, Hamilton, Ill.

**"BEEWARE"** and Dadant's Wired Foundation for the Northwest. Catalog prices. F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices. B. F. Smith, Jr., Fromberg, Mont.

**FOR SALE**—Comb, extracted and chunk honey. Prices on request. Samples 15c. F. W. Summerfield, Waterville, Ohio.

**HONEY FOR SALE**—Any kind, any quantity. The John G. Paton Co., 217 Broadway, New York.

### SUPPLIES

**ROBINSON'S COMB FOUNDATION** will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

**FRAMES**—Hoffman brood, \$3.95 per 100; Shallow extracting, \$2.85; also other bargains; all first quality; satisfaction guaranteed. Order now. Send for special price list today. Schmidt Bee Supply Co., 1420-22 Hager Ave., St. Paul, Minn.

**FOR SALE**—Good second-hand 60-lb. cans, two cans to a case, boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases. C. H. W. Weber & Co., Cincinnati, O.

**WESTERN BEEKEEPERS**—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.

The Colorado Honey Producers' Association, Denver, Colorado.

### MISCELLANEOUS

**SUPPLY** your customers with Honey Radiator Solution, over sixty per cent strength. Special low prices this month. John Auckland, Fairfield, Iowa.

**1926 HONEY LABEL** Catalog now ready. Send for it. Free. Liberty Company, Station D, Box 4206, Cleveland, Ohio.

**HON-E-NUT CHOCOLATES**—Made from pure honey, nuts and fruit. Large assortment in each package, \$1.00 per lb., postpaid. Beautifully lithographed cans for holiday gifts, \$1.50, postpaid. Fairmount Apiaries, Schuylkill Haven, Pa.

**STEADY** position for two men. State age, experience and wages expected. Extracted honey. B. F. Smith, Jr., Fromberg, Mont.

**WESTERN HONEY BEE**, 428 S. Hewitt St., Los Angeles, Calif., published by Western beekeepers, where commercial honey production is farther advanced than in any other section of the world. \$1.00 per year. Send for sample copy.

**"BEES AND HONEY"** is the only bee paper in all the great Pacific Northwest—soon to be America's most wonderful beekeeping territory. Sample copy free. American Bee Journal (\$1.50) with Bees and Honey (\$1.00) both together one year for only \$2.00. Address George W. York, Editor, 524 First Ave. So., Seattle, Wash.

**THE DADANT SYSTEM IN ITALIAN**—The "Dadant System of Beekeeping" is now published in Italian, "Il Sistema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price \$1.00.

**WE HAVE NOW ON HAND** from Paris, a number of copies of the excellent work of Perret-Maisonneuve, in French, entitled "L'Apiculture Intensive & L'Elevage des Reines." The first shipment was delayed over two months. The price of this very progressive work is \$1.50 by mail. American Bee Journal, Hamilton, Ill.

**GLEANINGS IN BEE CULTURE**, published at Medina, Ohio, is the most carefully edited bee journal in the world. Its editor-in-chief is George S. Demuth. Its field editor is E. R. Root. Ask for sample copy.

**HAVE YOU** any Bee Journals or bee books purchased previous to 1900 you wish to dispose of? If so send us a list. American Bee Journal, Hamilton, Ill.

**MAKE** queen introduction sure. One Safin cage by mail, 25c; 5 for \$1.00. Allen Latham, Norwichtown, Conn.

### WANTED

**WANTED**—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 6c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

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**WANTED**—A position by an experienced beekeeper with a large producer. Can give the best of references. Edney Hendrickson, Durham, Ark.

**WANTED**—Experienced beekeeper for 1926 season. Wages or share basis. Reference required. J. D. Beals, Oto, Iowa.

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Shasta Co., Bee Inspector.

### Do Your Bit—For Beekeeping

We have enjoyed the visit of H. F. Wilson, who is in charge of the Miller Memorial Library at the University of Wisconsin. It is an inspiration to follow the development of this library, not only because it means so much to the future of apiculture in this country, but also because it is in such able hands that it cannot help but soon be more than just a memorial to a well-loved fellow craftsman. It is planned to make it a great student library, whose volumes will be available to anyone seriously interested in the study of beekeeping.

The work of enlarging and perfecting the Miller Memorial, therefore deserves the help of every beekeeper. There are there now over 1,000 volumes of bee magazines in all languages, about the same number of individual books and pamphlets, and 200 reprints of articles which originally appeared in magazines. This is a fine beginning, but let's all add to it. Anyone who has old books or old magazines on beekeeping should get in touch with Professor H. F. Wilson, University of Wisconsin, Madison, Wis. Those who do not care to donate the material will find the Library willing to pay for whatever printed matter they may need. There are many old American bee magazines which are not in the Library and even single numbers of these are wanted.

### Perforated Flowers

In Science for September 25, Chas. Robertson, om Carlinville, Ill., quotes Sprengel as having observed the honeybee making holes in the flowers of *Aquilegia vulgaris* in 1793, while Mueller is mentioned as having observed the same thing in 1873. Mueller is also quoted as having observed them perforating the flowers of *Erica tetralix* and *Nepeta glechoma*. It is a well known fact that the first named flower, the columbine, is rich in nectar, but with flower tubes too deep for the bee to reach. That bees often gather honey through the perforation in the corolla tubes made by other insects is well known, but that they make such perforations themselves has not often been recorded.

The writer has observed bees working freely on flowers with corolla tubes entirely too deep for them, getting the honey through such perforations, but has never observed the honeybee to make any holes in flowers for herself. We will be glad to hear from any beekeepers who have observed the bees making holes in the flowers in order to reach the nectar.



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## Burr Combs

Burrs that Stick—In the Sand of the Southwest

By M. G. Dadant.

You know, Pellett took a long trip through the southwest last winter. And he came back home with a glowing account, not particularly of the country and climate, but of the beekeepers he met down there.

He said, in spite of boll weevil, reduction in cotton production and restriction in acreage of alfalfa and sweet clover, and an extremely dry season, still the beekeepers were **looking forward** and were far from a discouraged bunch.

Now, that's all right to tell, second hand, when you've been browsing in the sunshine of sandy Arizona and rounding out on three square meals at the expense of some good beekeeper (accidentally taken in by Pellett's good looks rather than by his conversation or his reputation).

But, frankly, this didn't set as "all wool and a yard wide" with us up here in the snow and sleet, with the temperature at zero, and the poor bees afraid to change position for fear they'd be rolled to the outside of the cluster to chill to the bone—if bees have bones. You know I can sympathize with the poor bee that has to take her turn at becoming the periphery of the winter cluster. I've sat in front of a fireplace just enough to know that you can feel blamed uncomfortable to have your fat side sizzling near the blaze, while your lean side is, metaphorically, with

MacMillan in Ellsmere land. Our older readers may know exactly how it feels from the fireplace days.

No, sir, we didn't believe the half of what Pellett said in his lucid moments about those fellows in the southwest. But one day I got disillusioned. You know I send market questions every month to a number of beekeepers in that territory as well as elsewhere. H. S. Robinson, of Old Albuquerque, one month answered on his card as follows:

1. Condition of bees—Short of honey.
2. Condition of plants—Need rain badly.
3. Crop so far—None.
4. Carry over of honey—Sold out.
5. Probable crop—Uncertain.

A pretty discouraging outlook—what?

But Robinson was not a bit downhearted—not he. Here's what he jotted down under "Remarks" at the tail-end of the card, just as a parting shot to show the optimism of the great southwest:

"I eat my beans with honey,  
I've done it all my life;  
It tastes a little funny,  
But it holds them on my knife."

That card of his came in May. I've kept it on my desk ever since. Whenever work gets heavy, the weather

bad, or I'm discouraged otherwise that card sort of renews the old spark of go-to-it-iveness.

Why, I've even got to the point where, every time we have beans at home, my wife has to call me down for a too liberal use of the knife. It's easy to see Robinson doesn't extract his honey till it's ripe. Thin honey won't work that way. I know because I've tried.

And the beauty of it is that Robinson only epitomizes the general attitude of the wide southwest. We've Pellett's word for it that Crawford, Collier, Powell, Benson, Gunter, Slease, Hadsell and all the rest of them are of that temperament too.

But after all, don't they just show the attitude of beekeepers in general? Did you ever hear of a beekeeper who wasn't looking forward to the good crop just ahead, forgetting the past failures?

Yes, I'll admit that maybe that's why we, as beekeepers, don't pay the attention we should to our market problems; the reason why honey is now selling at the pro rata speed of two pounds per person in the country.

But after all—why worry?

If we've got beans, honey, a knife and a little imagination, can't we oftentimes make a happy moment out of a trying situation?



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